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Number 4.

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CLASSIFIED INDEX FOR BUYERS, - Page 763

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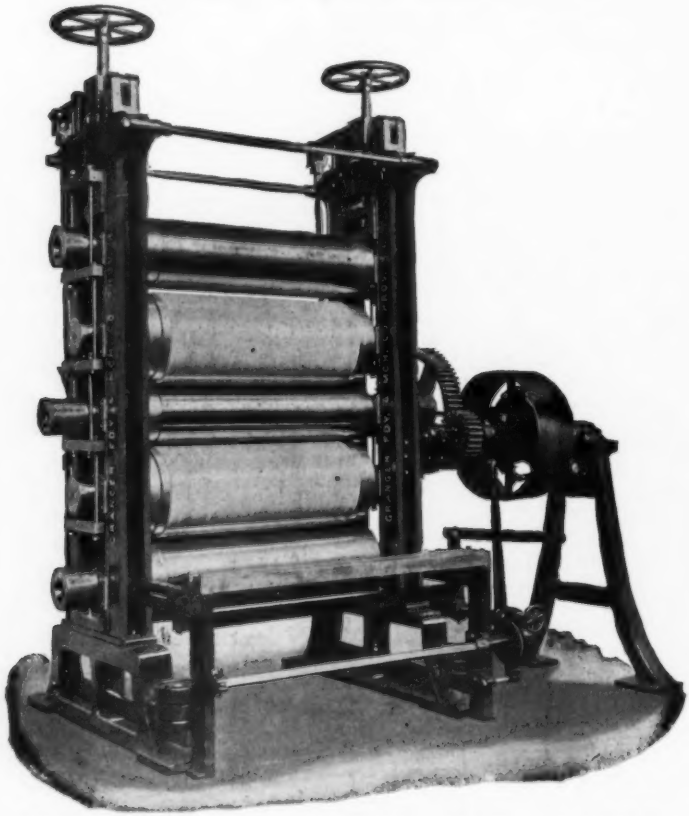
Bleaching, Dyeing, Drying,

And Finishing Machinery.



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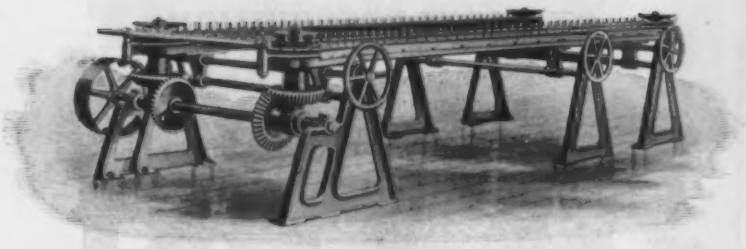

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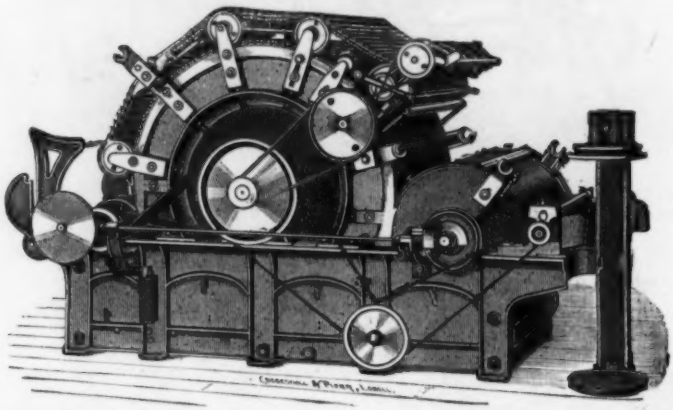

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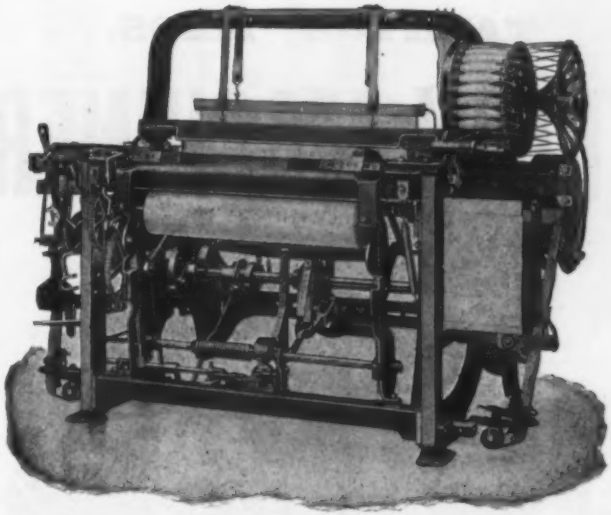

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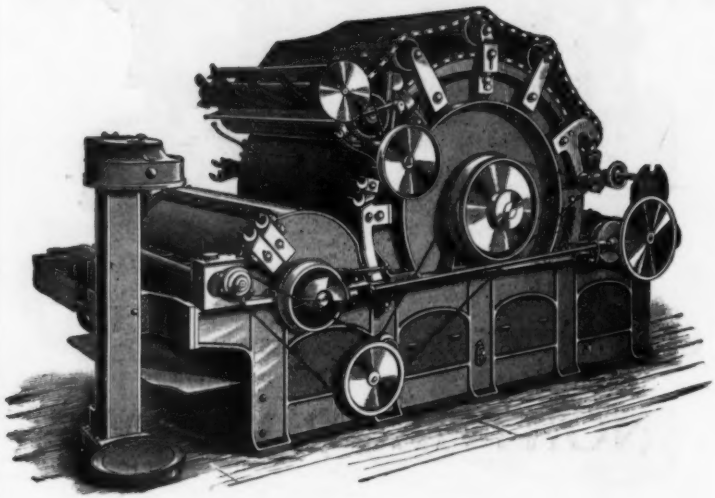

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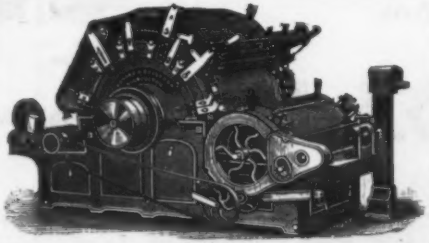

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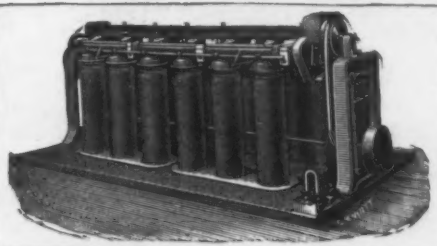

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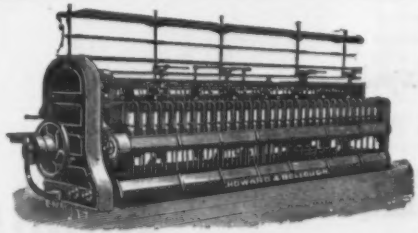

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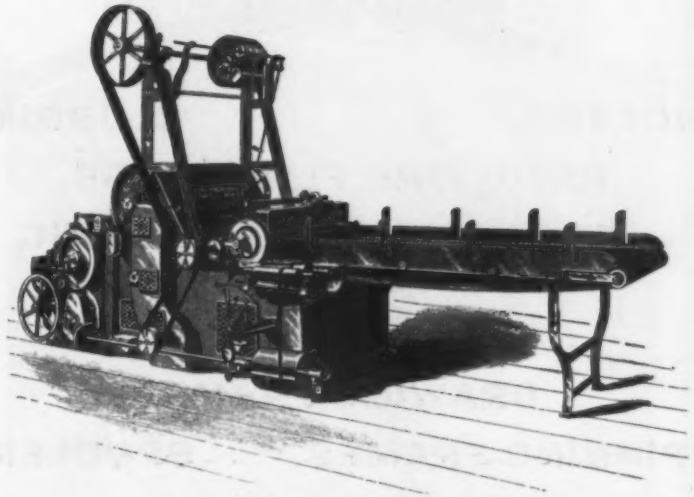

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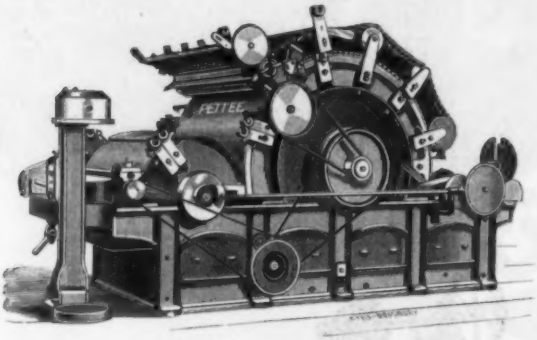

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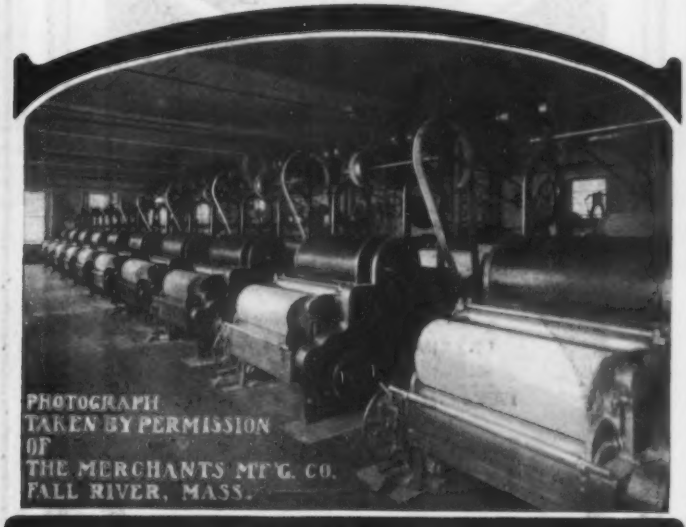

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PAWTUCKET, R. I.

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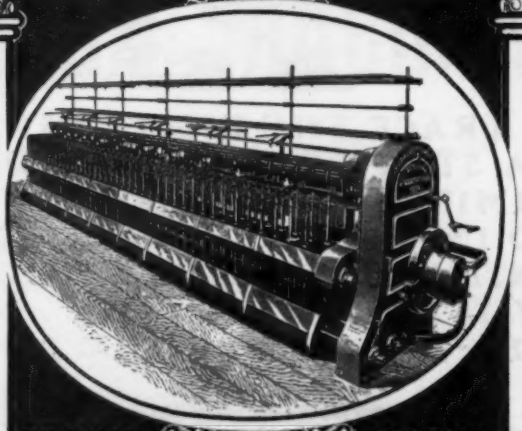

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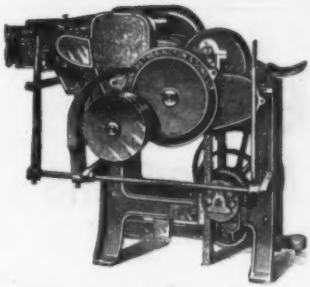

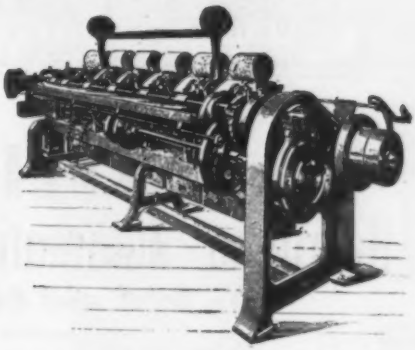

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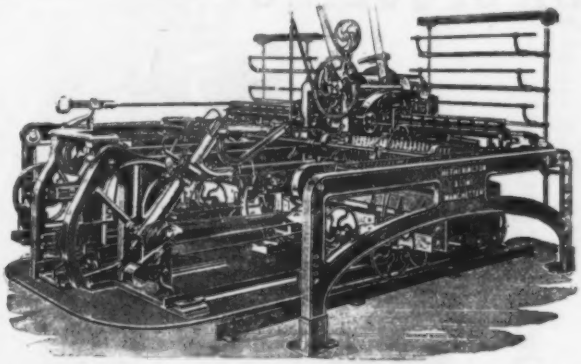
with Self Acting Stop Motion.

Ribbon Lap Machines
with six Laps behind for preparing Laps for Combing Machines, made to suit any width of Laps required.

Combing Machines,
single and double Nip for six or eight heads, to take Laps from 7 1-2 in. to 10 1-2 in. wide. Patent Stop Motions for stopping Machine, when delivering too light slivers, or after any required length has been delivered.



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POWER TRANSMITTING MACHINERY.
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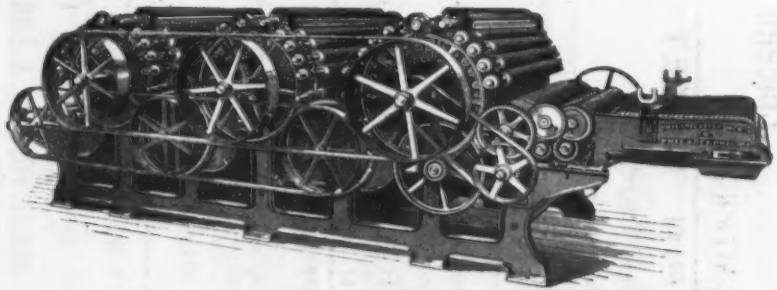

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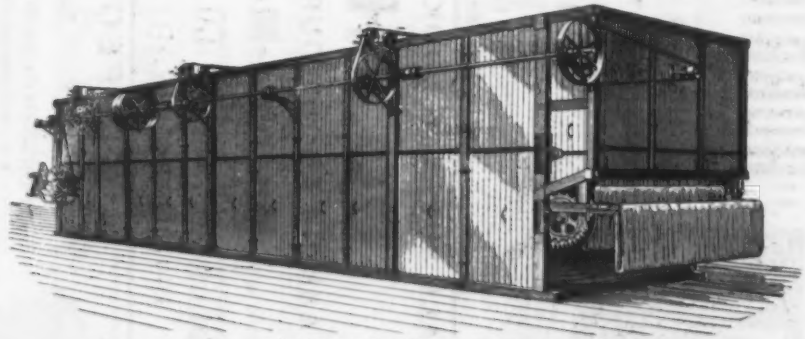

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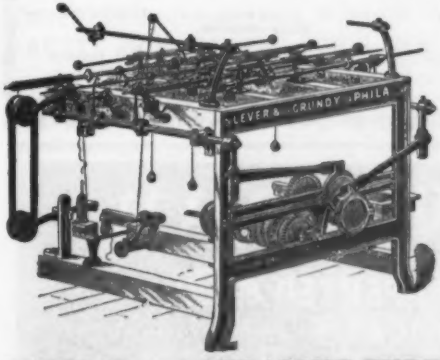

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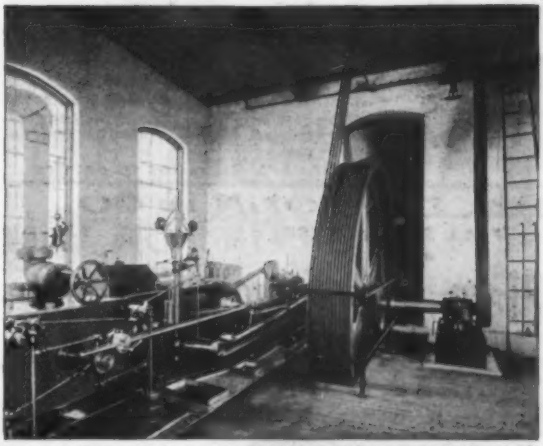

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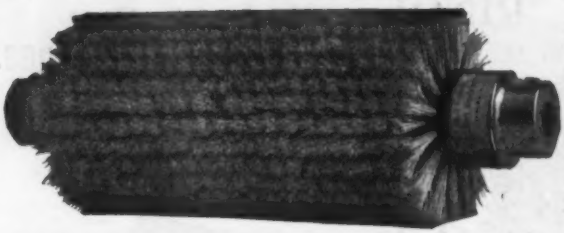

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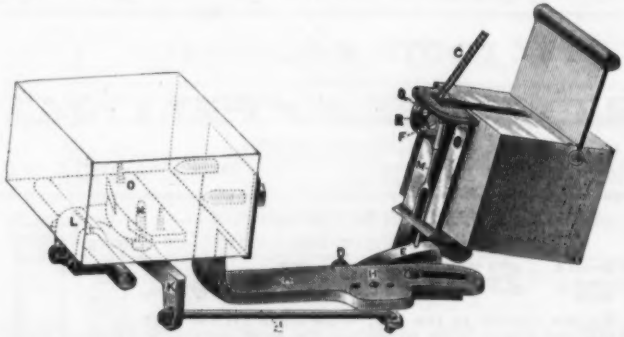

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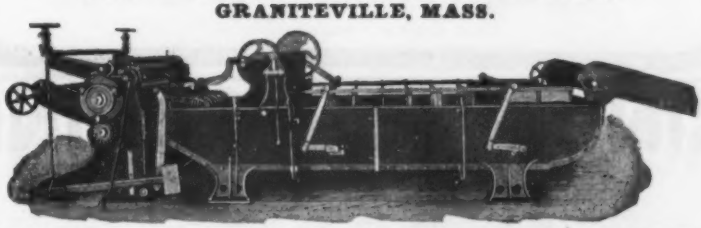

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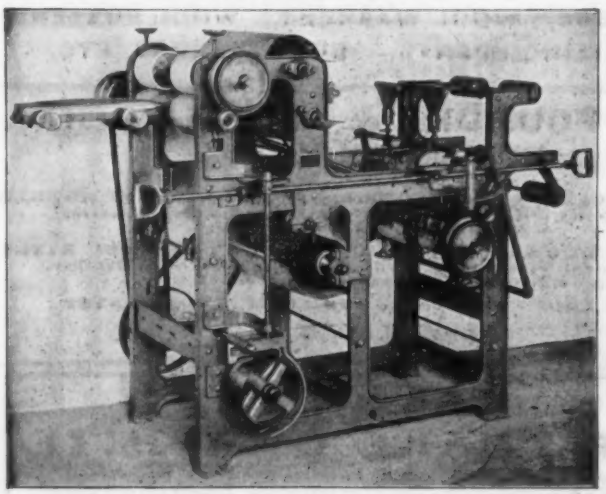

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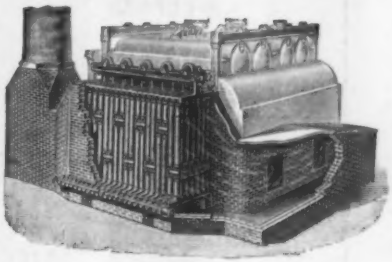

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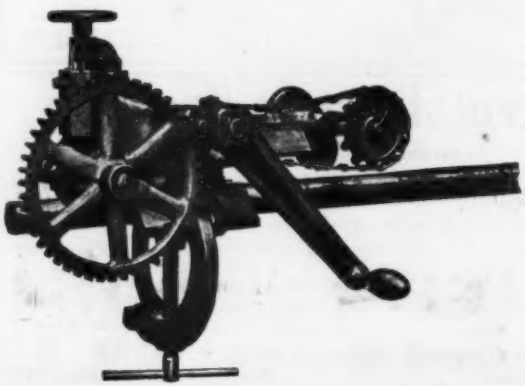

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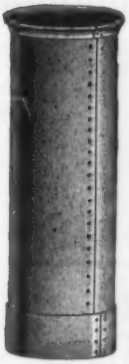

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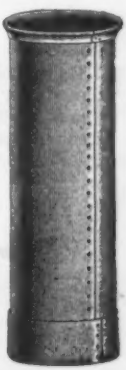

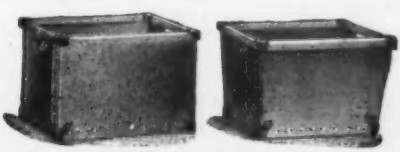

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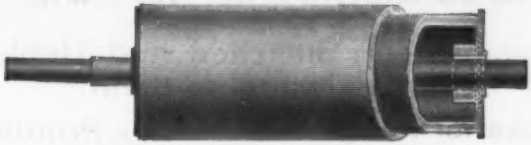

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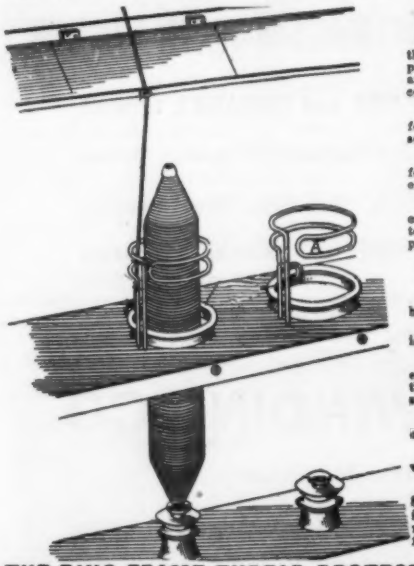
New Thread Protector for Ring Spinning



The following advantages are claimed for this protector.

1. The speed of the frame will be increased, and also the production; on frames without any protectors or plate separators about twenty-five to thirty per centum, and on frames with separators about twelve or fifteen per centum.

2. The threshing and consequent imperfection and inferiority of yarn and cloth, occasioned by the use of blade separators is entirely obviated.

3. The traverse of the rail can be increased from one-fourth of an inch to one inch, if frame permits, thereby enabling the use of longer bobbins.

4. The life of the traveller is prolonged fully fifty per cent on account of a more even tension being imparted to the traveller, the same being held in a perpendicular position at all points of the traverse.

5. Frame and rail more perfectly balanced.

6. Heavier travelers can be used.

7. The yarn is wound tighter and more uniformly on bobbins.

8. A material saving in time of doffing, as more yarn is wound on, and longer bobbins can be used.

9. Saving of time of the operator on account of fewer ends breaking, thereby increasing the quality of yarn, and the operator can attend many more spindles in consequence.

10. The life of the ring will be prolonged on account of decreased friction.

11. No accumulation of lint, dust and dirt, which invariably results in the use of blade separators.

The above results have been obtained in the mills of S Sanford & Sons, Carpet Manufacturers, Amsterdam, N.Y. in whose mills the protectors have been in use on all spinning frames since October, 1899, and by permission we refer to said firm for a confirmation of our claims.

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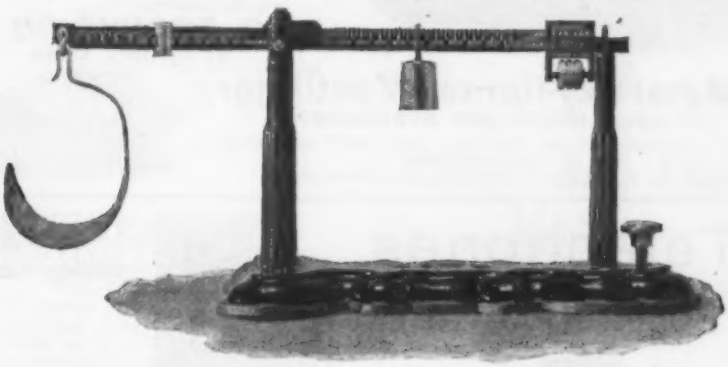

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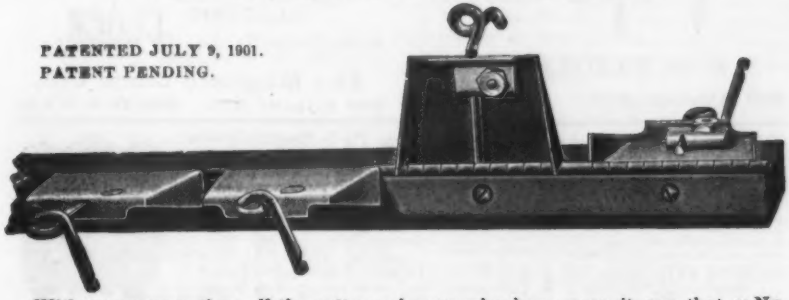

Without an exception, all the cotton spinners who have seen it say that "No new frames should be built without having this steel thread board," and many of them say, "It will pay the mill owners 100% to throw away their wood thread boards and use this steel one." A trial will convince the most skeptical."

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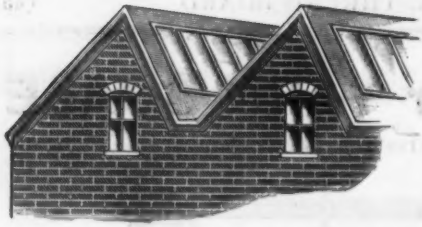

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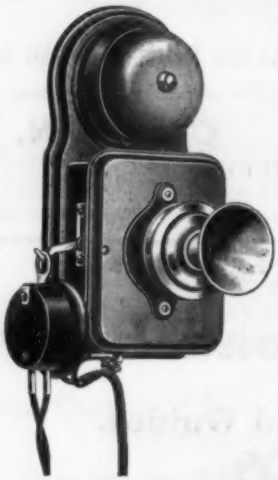

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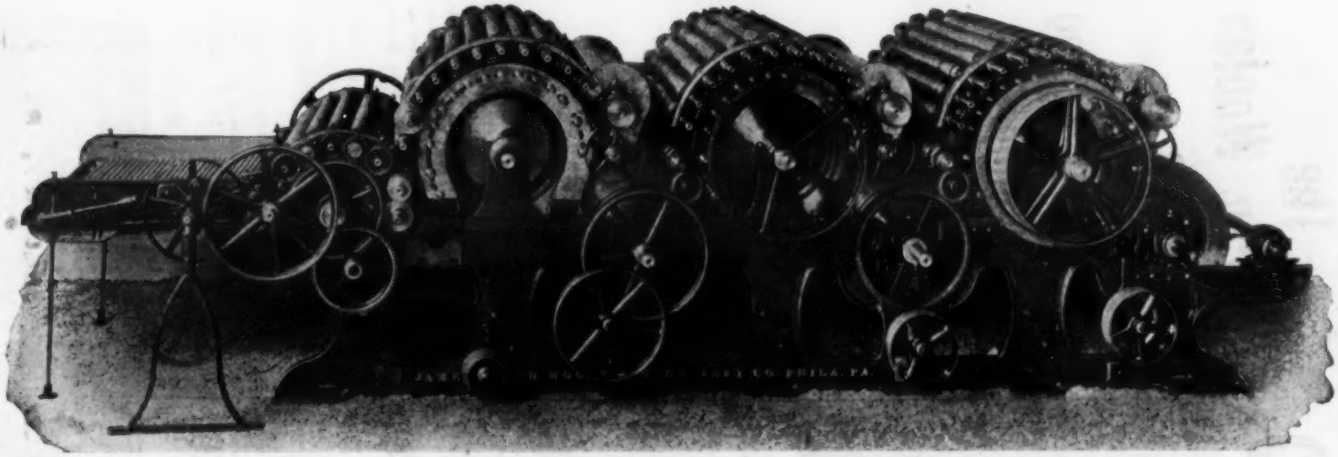

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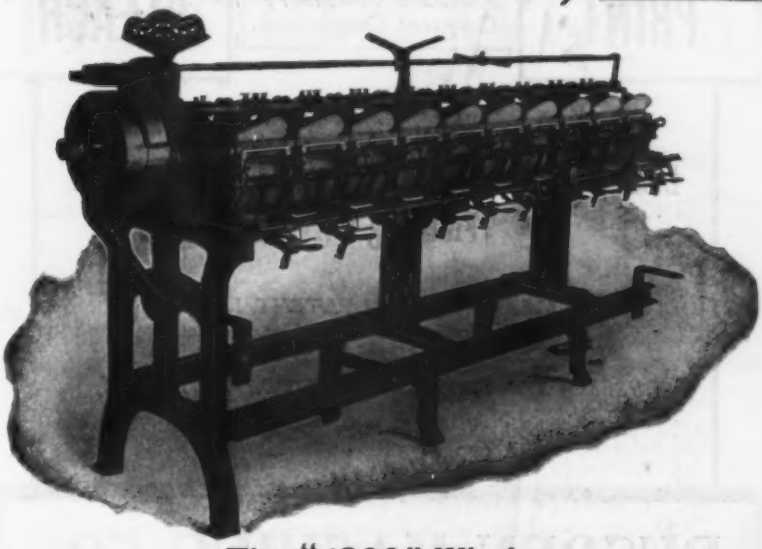

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List of Textile Patents.

Issued Aug. 27, Sept. 3, 10, 17 and 24, 1901.

Bat-forming Mechanism. 681,645. F. B. Pope and G. D. Mims, Parksville, S. C.

Braiding Machine. 681,450. Andrew V. Groupe, Moore, Pa., assignor of one-half to Lorenz R. Schwerin, Philadelphia, Pa.

Carding Machine Stop Motion. 681,563. Wm. H. Morgan and Frank A. Hannum, Ware, Mass.

Cloth Cutting Machines, Adjustable Guide and Flattener for. 683,047. Arthur I. Jacobs, Hartford, Conn., assignor to the Smyth Manufacturing Company, same place.

Coloring Yarns. 683,229. William Shaw, Brooklyn, N. Y.

Coloring Yarns, Apparatus for. 683,228. William Shaw, Brooklyn, N. Y.

Cotton Cleaner and Distributer. 682,816. John W. Seifert, Waco, Texas, assignor to Waco Cotton Machine Manufacturing Co., same place.

Cotton Gin Condenser. 682,879. Stephen D. Murray, Dallas, Tex.

Cotton Presses, Bat Compressing and Feeding Mechanism for. 681,928. Henry Rembert, Galveston, Tex., assignor of one-third to N. Weeks, Ed. McCarthy and H. Reidel, same place.

Cotton Topping Machine. 682,738. George W. Palm, Roundrock, Tex.

Dye and Making Same, Brown Sulphur. 681,689. Wilhelm Epstein and Emil Rosenthal, Frankfort-on-the-Main, Germany.

Dyeing, Etc., Apparatus for. 682,099. William Mather, Manchester, Eng.

Electric Cloth or Fabric. 683,098. Louis Baecker, Detroit, Mich., assignor of one-half to Elias Aberle, same place.

Dyeing. 681,613. Rene Bohn, Mannheim, Germany, assignor to Badische Anilin and Soda Fabrik, Ludwigshafen, Germany.

Fabric. 682,367. Claude A. O. Rosell, New York, N. Y., assignor to Jeremiah A. Scriven, same place.

Hat Dyeing Apparatus. 682,010. Joseph W. Wigner, Wabash, Ind.

Knitting Machine. 681,209. Emil J. Franck, Collingdale, Pa.

Knitting Machine. 681,415. Edward D. Friedlander, Chicago, Ill.

Knitting Machine. 681,546. Howard E. Harbaugh, Kenosha, Wis.

Knitting Machine Presser-bit. 681,451. Emil A. Hirner, Allentown, Pa., assignor to Excelsior Knitting Machine Manufacturing Co., same place.

Knitting Machine Take-up Mechanism. 683,377. John C. Brewin, Philadelphia, Pa.

Loom. 682,429. Eppa H. Ryon, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass.

Loom, Filling Replenishing. 682,563. Jonas Northrop, Hopedale, Mass., assignor to Draper Company, same place and Portland, Me.

Loom for Weaving Tufted Fabrics. 682,548. Charles Hughes, London, Eng.

Loom, Weft Replenishing. 682,034. Paul Clement, Wasquehal, France.

Loom, Weft-replenishing Mechanism. 681,905. William H. Baker, Central Falls, R. I., and Frederic E. Kip, Montclair, N. J.

Loom, Witch. 681,869. Elmer E. Brown, Mount Joy, Pa., assignor to himself and George H. Brown, same place.

Loom Dobby. 683,398. Joseph Highton, Manchester, Eng.

Loom Drop-Box Picker. 681,599. Frank A. Wardwell, Methuen, Mass.

Loom Jacquard Mechanism. 682,115. Walter Paton, Carlisle, Eng.

Loom Protector Mechanism. 681,373. Leonard M. Phelps, Pittsfield, Mass., assignor, by mesne assignments, to Draper Company, Hopedale, Mass.

Loom Shuttle-Box Operating Mechanism. 681,648. Henry Bardsley, Providence, R. I.

Loom Shuttle Filling Carrier. 682,534. George O. Draper, Hopedale, Mass., assignor to Draper Company, same place.

(*Continued on page 761*).

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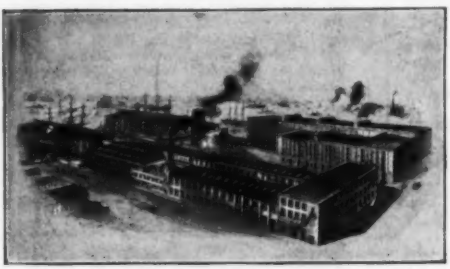

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SECOND EDITION—AUGMENTED

ERNEST M. GOODALL.

TEXTILE WORLD.

Vol. XXI. OCTOBER, 1901. No. 4.

ERNEST M. GOODALL.

The subject of this sketch is at present an active and successful man of affairs, and is well-known in the textile trade as president of the Sanford Mills, Sanford, Me., where mohair plushes, carriage robes and blankets are extensively manufactured.

Mr. Goodall is the youngest son of Thomas and Ruth Goodall, and was born in Troy, N. H., Aug. 15th, 1853. He attended school in his native town and Burlington, Vt., and later pursued a course of study in England.

On returning to this country he entered his father's mills, and by working in all of the departments acquired a thorough knowledge of the methods of manufacturing. He was appointed superintendent of the mills, and upon the retirement of his father from active business, was elected president of the Sanford Mills.

Mr. Goodall is a man of great executive ability, which is manifested in a very quiet, but effective manner. He is thorough in every work that he undertakes. His energy is illustrated by the fact that he is at the mill promptly at starting time every morning to see that everything is all right. Soon after entering the mill he was placed in charge of the construction of a mill canal, and carried the work out to a successful conclusion. He possesses sound judgment, and this quality is combined with the rare ability of being able to decide and after a decision is made to carry it out without vacillation and with energy to a successful end.

Much of his success as a man of affairs can be ascribed to the prominent part he has always taken in athletic sports. He does not allow too persistent an application to business to weaken his powers, but has always devoted more or less time to outdoor exercises, such as base ball, bicycling and yachting. Every winter he spends a portion of his time on his yacht in Southern waters. He has hunted the alligator with success, and brought home several fine specimens of that animal.

Mr. Goodall is an unassuming man, and his liberality and public spirit is manifested in a quiet and unostentatious manner. He enjoys the respect and confidence of all who know him, and his counsel is highly prized.

He has been an important factor in establishing numerous manufacturing plants, among which may be mentioned the Goodall Worsted Co., manufacturers of fine worsted suitings and worsted yarns, the Holyoke Plush Co., Holyoke, Mass., and the Maine Alpaca Co., Sanford, Me. He is at present a director in each of the above concerns.

He has been prominent in many enterprises for the improvement and betterment of his town, being the foremost promoter of the Sanford Light & Power Co., the Mousam River Railway Co., and the Sanford & Cape Porpoise Railway Co., and the Atlantic Shore Line Railway.

He has been prominent in politics, having served the people in several different capacities. He was elected to the Board of Selectmen in his town for three consecutive terms. In 1880 he was elected representative to the State Legislature, and in 1882 was chosen State Senator. For two years, from January 1st, 1885, to 1887, he was a member of Gov. Roble's council.

He has been a constant and firm supporter of ex-Speaker Reed and upon the retirement of the latter from Congress, was mentioned prominently as his successor.

At present his time is fully occupied with the extensive business interests the success of which is due in such large measure to Mr. Goodall's judgment and executive ability.

WILLIAM McKINLEY.

The past month has witnessed the assassination of a President of the United States by a deluded follower of anarchy. The people mourn the loss of a wise, far seeing, patriotic leader, but the great outburst of grief which overwhelms the people is due to the fact that this President who has been so rudely taken away from them was one after their own hearts, a plain, honest, unassuming man. He is mourned because of the noble way in which he lived and died.

It is well that the assassin did not fall a victim to the rage of the people. He has been indicted, tried, convicted and sentenced and before another issue of this journal, will have been killed by the people acting through the forms of law, killed as effectually as any mob could do it.

William McKinley's services to his country in war and peace were ever in support of law and order and it is fitting the decree of the people that his murderer must die, should be executed in accordance with the forms of law.

The effects, direct and indirect, of this tragic event upon the industrial interests of the country can now be foreseen. The wisdom of President McKinley's public policy is so apparent as to force its adoption by his successors. Government of the people is greater than any one individual.

A people that loved so well and trusted so completely such a man as William McKinley may in turn be trusted to wisely govern themselves.

WAGES AND PRINT CLOTHS.

One month ago the Fall River mill operatives were confronted with a proposition on the part of their employers to reduce wages fourteen per cent. That proposed reduction was abandoned, although the low prices of goods apparently afforded good reason for asking the operatives to consent to some reduction.

We called attention in the September issue to the exceptional position occupied by one large Fall River mill corporation which operated its own print works. This corporation has since then voluntarily advanced the wages of its operatives five per cent., and the help in other mills, assuming that, if one mill can afford to raise wages five per cent., the other mills can do the likewise, at once made a formal demand for a like increase. This request was declined by the manufacturers who addressed the following letter to the Textile Council:

Fall River, Oct. 1, 1901.

James Whitehead, Esq., Secretary Textile Council:

Dear Sir,—Your letter of the 25th ult. was duly received and has been referred to the manufacturers. I am instructed to inform you that your request for an advance of five per cent. cannot be entertained. The market conditions do not warrant the advance asked for. The present margin figured on the basis agreed to by your committee and the manufacturers is now 66 94/1000 cents. Had the manufacturers accepted the sliding scale of wages proposed by your organization which you were anxious to have adopted, but which was considered so unfair that they were compelled to reject it, wages would now be based on eighteen cents for weaving or nine per cent. less than they are now paying. The question of margins cannot be eliminated from the wage schedule, nor can the exceptional conditions under which one or two corporations are situated be accepted as sufficient grounds on which to grant the advance.

C. M. Hathaway, Secretary.

All of the labor organizations with the exception of the Spinners', who constitute a relatively small proportion of the help, then voted to strike on Oct. 7th. The strike appeared to be unavoidable three days before the date fixed for it, when the leaders postponed action for two weeks, on the ground that the vote to strike should be unanimous. During these

two weeks the workers can profitably study a situation that is unique in the history of labor disputes, and where propositions on the part of mill owners to reduce wages, owing to depression of business, have been succeeded with kaleidoscopic rapidity by the unexpected advance of wages by a prominent manufacturer, and the demand by the operatives for a general advance of equal size.

In 1899 the mill owners and operatives at Fall River considered the wage question, and propositions for the adoption of a sliding scale were made by both sides. The wage scale asked for by the operatives was higher than that proposed by their employers.

The operatives then asked that when the margin between the selling price of goods and the cost of cotton was 80 cents per cut, wages throughout the mill should be based on 19 cents per cut for weaving. If the margin increased or decreased, wages were to increase or decrease in accordance with a certain scale. Following is the schedule proposed at that time by the operatives for increasing and decreasing wages:

Margin.	Wages.
80 to 70	19 cents per cut
Below 70	5% reduction
Below 60	10% reduction
Above 90	5% increase
Above 100	10% increase

This margin was to be calculated by subtracting the market value of 8 lbs., middling uplands cotton from the market value of 22½ yards of regular and 16 36/100 yards of wide print cloths.

No agreement was then reached, as the mill owners were unwilling to agree to the scale proposed by the operatives, which they considered unreasonably high, and today the wage scale is based upon a weaving price of 19 8/10 cents per cut, which has been unchanged since December, 1899, and is the result of agreement made without regard to the so-called margin.

Let us, however, calculate the margin on the basis which represented the extreme demands of the operatives in 1899, and see what would be the wage scale by that method on Oct. 1st, 1901, when the operatives demanded an increase of 5 per cent. above 19 8/10 cents per cut.

Margin under present conditions:	
22½ yards regulars, 3c.	.675
16 36/100 yards wide goods, 4c.	.6544
	1.3294
Deduct value 8 lbs. cotton, 8¼c.	.66
Margin	.6694

By the operatives' sliding scale a wage reduction of 5 per cent. below 19 cents per cut was to take place when the margin dropped below 70. This would make today's basis 18 5/100 per cut. The demand, for which the operatives now propose to strike, is for 5 per cent. above 19 8/10, or 20 8/10. In other words, the operatives ask now for over 15 per cent. more than they were satisfied with in 1899. Their own proposition at that time would reduce their present wages about 9 per cent.

If the workers' 1899 proposal had been adopted, the wage rate of 20 8/10 now demanded, which is nearly 10 per cent. above 19, would be reached only when the margin rose above 100.

With cotton at its present price, 8¼ cents, this margin of 100 could be reached only by the price of goods rising 25 per cent. from today's level to 3¾ cents for regulars and 5 cents for wide goods. With goods at their present level of 3 cents for regulars and 4 cents for wide goods, this margin of 100 could be attained only by the price of cotton dropping 50 per cent. to the impossible level of 4 1/16 cents per pound.

We cite these illustrations to show the wide difference between the demand of 1899 and that of 1901.

What is the reason for this change? It will be well for the operatives to consider that question. The broad principle is as true today as it was in 1899 that the interest of the mill owner and mill worker is common. If the selling price rises above the

cost of goods, the profits of the owner increase and the worker should share in the prosperity.

On the other hand, if the selling price falls below the cost of goods, the worker should be willing to share in the reduction of his employer's profits.

At today's prices the manufacturer receives $1.33 for 22½ yards of regular and 16 36/100 yards of wide goods. With cotton at 8¼ cents, these same goods cost as follows:

8 lbs. cotton, 8¼	.66
Mfg. 6 43/100 lbs. cloth 10c. per lb.	.643
	1.303
Selling price	1.33

No allowance is here made for depreciation of plant and machinery. The mill workers should consider whether these figures indicate conditions that warrant an advance of wages above the highest rate ever paid before, and a consequent increase in the cost of goods.

But the question is asked: If one or two mills can pay the advance, why cannot the others do the same?

To this question it may be said that the figures we have quoted indicate the general business conditions, by which the question of increase or decrease of wages should be decided. What one man can do or is willing to do cannot change the inexorable logic of these figures.

The sudden and eccentric increase of 5 per cent. has been made by a corporation that will be greatly benefited by the curtailment of production. Wages are today higher than ever before, while the cotton business is by no means in a satisfactory condition. Southern mills, paying low wages and working long hours, are turning out a vast product that comes in direct competition with that of the Northern factories.

Suppose the operatives succeed finally in securing the 5 per cent. increase. It will take them a year working without interruption at the advance to make up for the loss of fifteen days while on a strike. A two months' strike will necessitate three years and four months to make them even. Is the game worth the candle?

On the other hand how will this strike affect the mill owners? Their storehouses are filled with goods, which they cannot sell. The strike curtails production, increases the price of goods and thus puts money into the mill owners' pockets, while taking it out of pockets of the strikers. This benefit to the employers extends in even greater measure to the corporation that has advanced wages.

This company will profit by the increase in the value of goods already manufactured and of all the goods they may produce during the strike. May not this be the reason why they increase wages 5 per cent. without any demand for it from the workers?

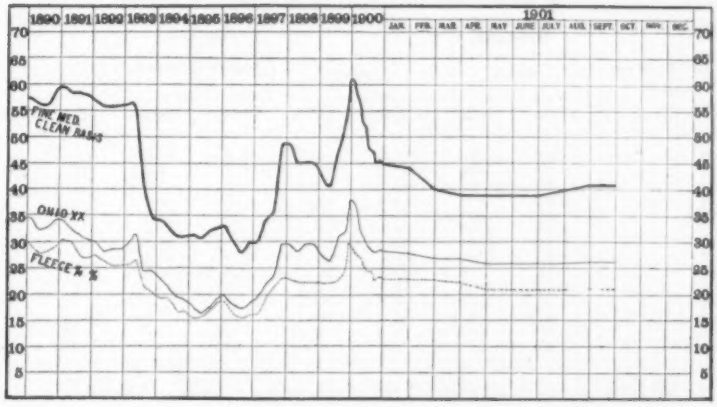
We ask the operatives to look these facts in the face. Are they not in danger of making themselves the instrument by which others are enriched at their expense? It is a time when they should think for themselves.

Russian Cotton.

The U. S. Consul at Moscow, states that 233,556,779 lbs. of cotton were shipped into European Russia, via. Krasnovodak, during the year ending April 1st. 1901. He adds that the production of cotton in Central Asia is increasing every year. The Government and the cotton consumers are assisting the planters to improve the cultivation, so as to compete with American cotton in European Russia. The planters have now almost learned to prepare the cotton by the American system, and receive very high prices. The seeds are imported from the United States.

The Russian consumers prefer to buy the Central Asia cotton, as it is packed in small bales, the same as Egyptian, since in the transportation of the large bales there is a loss of from 8 to 10 per cent. in weight. This is a very important question for American producers.

WOOL MARKET.



Since our last report, the wool market has been quiet, and prices have been steady, although the advance of the previous month has not continued. The Buffalo tragedy has not as yet had any marked effect upon the woolen business; since that sad event business has assumed a more quiet tone.

There is a feeling of confidence throughout the trade. Mills are well supplied with orders, and prices are on a very conservative basis, so that there is no reason to anticipate any setback.

The only disturbing feature is the agitation in favor of a change of the duty on wool through the enactment of reciprocity treaties. Such measures will undoubtedly meet with strong opposition on the part of the wool growers, and the trade fear that the agitation of reciprocity which, in the abstract is a very alluring proposition, will result in a disturbance similar to that which has always accompanied old-fashioned tariff agitations.

The advance noted at the opening of the London wool auction has been maintained, and a slight improvement, both in England and on the continent, is noted in the woolen business. Initial orders for woolen goods have now all been booked, and the mills find themselves in a fairly satisfactory po sition as regards future contracts.

The worsted mills are very busy on orders. A very satisfactory condition exists in all branches of the woolen and worsted industries, and a feature of the situation is the increased use of wool in the manufacture of woolen goods.

—Our Canadian neighbors are having practical experience with reciprocity. As the readers of this journal already know, the import duty on woolen goods brought into Canada from Great Britain was reduced some years ago. Whatever may have been the effect of this change on other industries, it has given woolen manufacturing what appears to be a death blow. A prominent Canadian woolen manufacturer and a supporter of the political party that adopted the preferential tariff states publicly that "if relief is not speedily brought to bear, many of our woolen mills must soon cease to exist." From this it appears that there is reciprocity and reciprocity. Our Northern neighbors apparently have the jug handle variety. If the United States is to try reciprocity, let it be the genuine article. It is cheaper to profit by the experience of others than by our own.

—Love appears in the countenance of a child because he has not attained the age of experience.—Carrick.

EXPORTS AND IMPORTS OF RAW WOOL, YARN AND WASTE.

Lbs. in units of one million. Value in units of $100,000.

Year Ending June 30.	Exports.		Imports.					
	Wool.		Wool.		Shoddy, noils, etc.		Yarn.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
1890	.231	.335	106.3	152.6	5.0	20.5	3.5	19.9
1891	.291	.394	129.3	182.4	1.2	4.3	2.0	11.9
1892	.202	.306	148.7	196.9	.3	.9	1.3	7.5
1893	.091	.148	172.4	210.6	.3	1.1	1.2	6.9
1894	.520	.906	55.2	61.1	.1	.5	.5	3.6
1895	4.289	4.844	192.8	229.9	14.1	19.8	2.4	11.7
1896	6.945	8.559	228.4	315.0	18.7	26.5	2.0	10.5
1897	5.371	6.199	366.6	567.5	49.9	69.3	1.8	9.6
1898	.121	.180	132.8	167.8	3.3	6.9	.3	1.9
1899	1.6o3	2.373	76.7	83.2	.3	.7	.2	1.1
1900	2.200	3.872	155.9	202.6	.4	.9	.2	1.3
1901	.200	.240	104.0	125.2	.6	1.8	.2	1.5
July	.003	.003	10.2	10.53	.03	.10	.02	.16
August	.001	.001	12.7	14.40	.007	.02	.02	.18

EXPORTS AND IMPORTS OF MANUFACTURED WOOLENS.

Value in units of $100,000.

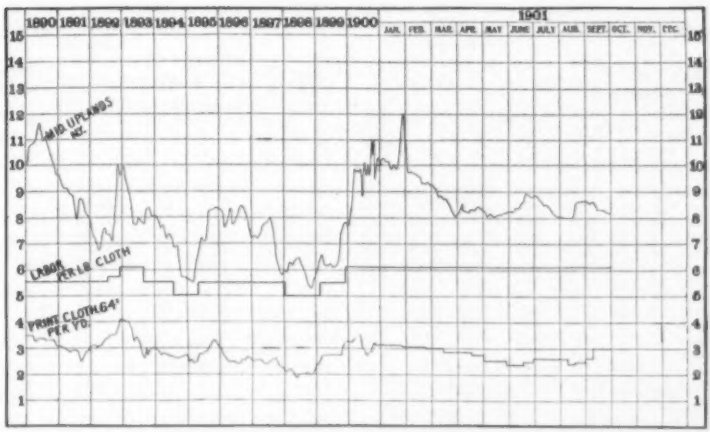
Year Ending June 30.	Exports — Value.						Imports — Value.							
	Carpets.	Dress Goods.	Flannels and Blankets.	Apparel.	Other.	Total.	Carpets.	Cloths.	Dress Goods.	Shawls.	Clothing	Knit Goods.	Other.	Total.
1890	.067	..	.409	3.179	.719	4.374	7.5	161.4	242.0	10.1	18.4	19.8	66.2	525.4
1891	.184	..	.265	4.240	.502	5.191	13.7	120.3	182.4	7.2	18.6	12.5	39.7	394.4
1892	.093	..	.244	2.689	.649	3.675	12.9	127.6	164.7	3.5	14.8	11.6	12.1	347.2
1893	.115	..	.242	2.224	.679	3.260	15.8	151.2	164.8	2.8	11.7	14.1	12.0	372.4
1894	2.500	..	.387	3.172	1.685	7.744	9.6	67.6	85.8	1.6	8.6	10.0	7.2	190.4
1895	1.610	..	.498	3.161	1.432	6.701	13.6	163.0	144.0	2.0	10.0	9.4	11.8	353.8
1896	2.252	..	.370	3.653	2.860	9.135	8.9	218.9	199.3	4.5	13.0	25.4	27.4	497.4
1897	1.895	..	.573	3.858	3.150	9.476	7.8	170.1	167.9	4.6	9.8	25.3	27.0	412.5
1898	1.612	.414	.474	4.299	4.074	10.89	17.9	39.6	60.4	.4	7.6	3.9	9.6	139.4
1899	.811	.169	.427	5.388	3.679	10.47	17.6	39.1	59.1	.5	8.3	6.3	5.6	136.5
1900	1.150	.244	1.002	5.654	4.485	12.54	27.5	51.3	58.7	.8	9.9	5.0	6.3	159.5
1901	1.051	.082	1.230	8.060	5.005	15.43	27.0	39.6	53.7	.8	11.7	4.1	5.3	142.2
July	.170	.002	.093	.853	.465	1.39	3.33	6.87	7.11	.04	.99	.78	.51	19.54
August	.029	.014	.341	.576	.582	1.55	2.49	5.00	6.02	1.12	1.12	.99	.42	17.16

—A New Jersey mill owner has announced that no operatives will in future be employed unless they belong to families owning their own houses. The object of this regulation is said to be to exclude anarchists. It simply shows how thoroughly aroused at least one New Jersey manufacturer is to root out anarchy. As a practical measure, however, it is doomed to failure. Manufacturing can not be conducted on any such basis. Such a rule casts an unmerited reflection on the vast majority of mill workers, who have no sympathy with the teachings of anarchy. It is not possible of all families of mill workers to own the houses in which they live, and in very many cases it is not desirable. The vicissitudes of individual mills render it a most risky investment for a mill worker to purchase real estate.

—The Merchants Silk Association of Lyons estimates the production of raw silk throughout the world in 1900 at 36,379,200 lbs., divided among the different countries as follows:

Far East	22,827,200 lbs.
Central Asia and Asia Minor	3,861,000 lbs.
Italy	7,205,000 lbs.
France	1,619,200 lbs.
Spain	184,800 lbs.
Other countries	682,000 lbs.

COTTON MARKET.


1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900
1901
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
MID UPLANDS NC.
LABOR PER LB CLOTH
PRINT CLOTH 64" PER YD.

The course of prices for the past month has been steadily downward in spite of the industrious circulation of reports as to injury of crops by frost.

One factor has been the small demand from abroad. Foreign manufacturers are apparently convinced that the present season's yield will be large, and that they will have no difficulty in covering their contracts at prices as low, if not lower, than present quotations.

The reports of damage to the growing crop have been greatly exaggerated and there is nothing to indicate that the crop will not be large.

The movement of the staple has been light. The South is apparently of the belief that the present dip in prices is but temporary, and that the normal demand throughout the world will result in an early strengthening of prices.

The domestic cotton goods market is steady outside of Fall River, where the continuous kaleidoscopic performance in print cloths is still in progress. Local conditions are exercising an unusual effect upon that portion of the market.

In our last issue we made editorial reference to the print cloth situation. Our conclusions were based upon a personal study of the conditions on the spot, and recent developments have only served to confirm the conclusions then expressed.

There is no occasion for anticipating any slump in cotton goods from the present level, and the quotations for the raw material will depend mainly upon the size of a crop which is to supply a demand which cannot be less and may be considerably greater than that of last year.

The Chronicle reports the world's stock of cotton in sight Sept. 27th at 1,474,825 bales, as compared with 1,405,161 bales in 1900, 2,899,671 bales in 1899 and 2,264,849 bales in 1898.

Waste from the Montfort Comber.

In the September issue we published a report on the Montfort comber, made by M. Paul See to La Societe Industrielle du Nord, France. In this report, M. See states that the waste of American cotton on this comber varies from 22 to 24 per cent. We are, however, informed that since this report was presented, further tests have been made on a larger scale, which show that the waste on this machine varies from 10 to 18 per cent., and can be regulated according to the requirements of each individual case.

EXPORTS AND IMPORTS OF RAW COTTON AND WASTE.

Lbs. in units of one million. Value in units of $100,000.

Year Ending June 30.	Exports.									Imports.				
	Sea Island.		Other.		Total.			Cotton Waste.		Raw Cotton.			Cotton Waste.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value	Value per lb.	Lbs.	Value.	Lbs.	Value.	Value per lb	Lbs.	Value.
1890	9	23	2462	2486	2471	2509	10.15	..	..	8.6	13.9	16.16	..	..
1891	14	31	2863	2876	2907	2907	10.00	..	..	20.9	28.2	13.49	..	..
1892	19	16	2926	2568	2945	2584	8.77	..	..	28.7	32.1	11.18	..	..
1894	8	17	2204	1870	2212	1887	8.53	..	..	43.4	46.9	10.80	1.9	.8
1894	14	29	2669	2080	2683	2109	7.82	..	..	27.7	30	10.83	2.7	.9
1895	15	28	3502	2021	3517	2049	5.82	..	..	49.3	47	9.53	2.9	1
1896	19	38	2316	1862	2335	1900	8.13	..	..	55.3	66	11.93	6	2.1
1897	21	41	3082	2268	3103	2309	7.12	..	.	5..9	59	11.36	5.3	1.7
1898	16	28	3834	2277	3850	2304	5.98	19.1	7.9	52.7	50	9.48	6.7	1.5
1899	14	24	3759	2072	3773	2096	5.55	21.1	8.3	50.2	50.1	9.98	6	2.1
1900	18	30	3082	2388	3100	2418	7.80	38.6	17.7	67.4	79.6	11.81	7.9	2.4
1901	11	22	3320	3137	3331	3137	9.41	50.6	26.3	47.0	68.0	14.46	6.2	1.9
July	.8	1.2	117.5	102.0	118.4	101	8.69	2.9	1.2	7.2	8.5	1..08	.7	.2
August	.13	.30	85.5	71.5	85.6	72	8.41	2.9	1.1	5.3	6.6	12.45	1.8	.4

EXPORTS AND IMPORTS OF MANUFACTURED COTTONS.

Value in units of $100,000.

Year Ending June 30	Exports — Value.					Imports — Value.							
	Colored.	Uncolored.	Apparel.	Other.	Total.	Colored.	Uncolored	Apparel	Laces, etc.	Thread.	Knit Goods.	Other.	Total.
1890	29	55	2	14	100	33.7	1.3	3.4	114.5	9	71.5	65.8	299.2
1891	26	93	3	15	137	42.4	1.7	12	105.9	8.6	67.4	59.2	297.2
1892	25	87	4	16	132	45	1.4	12.6	112.5	6.6	58.3	46.7	283.1
1893	28	63	5	22	118	55.4	2.6	16.8	127.4	7.6	63.9	61.8	335.5
1894	38	76	5	24	143	33.8	1	16.6	80.2	3.3	43.6	45	223.5
1895	35	70	5	28	138	54.3	1.3	27.7	116.9	6.6	65.4	59.9	331
1896	34	95	7	32	168	49.2	1.8	26.8	108.8	8.7	61.9	67.1	324.3
1897	48	125	9	29	211	44	2.7	26.3	125.7	6.5	56	83	344.2
1898	41	92	9	25	167	53.1	1.2	10.5	117.7	6.9	40.3	42.9	272.6
1899	52	138	13	30	233	66.5	1.1	10.3	145.5	8.5	43.4	45.3	320.6
1900	48	132	16	37	233	81.6	3.6	12.4	192.1	21	47.2	55.3	413.2
1901	56	76	17	33	192	59.2	2.0	15.3	202.3	17.5	55.0	51.4	402.7
July	5.9	19.9	1.4	2.8	30.	2.8	.03	1.06	1..	1.33	3.78	5.88	31.85
August	3.7	13.	1.7	2.9	21.3	2.4	.05	.91	18.9	1.32	3.67	5.30	32.58

—The U. S. circuit court has reversed the decision of the Board of Appraisers in the Rice, Stix & Co. case, involving the classification of partly "boiled off" silk goods. The merchandise in suit consisted of certain silk goods which were returned by the appraiser as "all silk, boiled off," and assessed for duty at the rate of $3 per pound, under paragraph 387 of the act of July 24, 1897. The importers protested, claiming the merchandise to be only "partly boiled off," and properly dutiable at the rate of $2.50 per pound, under the same paragraph as "silk in the gum," which claim has been sustained by the United States circuit court in the following opinion:

The goods in question are classified and claimed under paragraph 387, act of 1897. It is undisputed that they are "all silk." The only question is whether, under the latter parts of said paragraph, they are dutiable (as assessed) at $3 per pound as "boiled off" or (as claimed) at $2.50 per pound as "in the gum." The evidence tends to prove that the goods, while they have been partly boiled, have not been "boiled off," for apparently out of 25 per cent. of gum only 7 6/10 per cent. have been removed, thus leaving 17 4/10 per cent. in the article.

In view of the fact that the goods still remain chiefly and substantially in the gum more than in any other condition, I think the slight boiling is insufficient to remove them from the classification as "silk in the gum." They have been boiled, but not boiled off in the sense of a substantial boiling sufficient to accomplish the result of removing the gum from the silk.

The decision of the Board of General Appraisers is reversed.

The Woolen Goods Market.

Now that the initial orders on light weight woolen and worsted fabrics for spring have been practically all booked, a fair estimate can be formed as to the general character of the business for the season.

While the largest buyers have as a rule been more than usually conservative, the aggregate volume of business has not been at all disappointing, and on many lines the mills have their entire production sold up for the season.

It is generally expected that this conservative early buying will result in supplementary purchases of considerable dimensions, but few evidences of duplicate ordering have yet developed.

In most instances the best business has been done along the line of staples, such as cheviots, clays and serges, and manufacturers of this class of goods have their entire product already placed for the season.

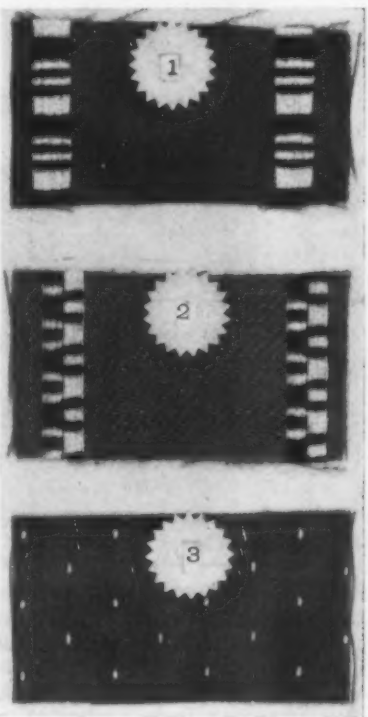
Prices on the above lines have ruled firm, although there has been some irregularity in low grade fancies on which business has not been so satisfactory. The soft finished fancies, unfinished worsteds and goods of that description have in almost every instance been the best sellers, but the lines of hard finished worsted and cassimeres have not been by any means sold up, and it is in this section that the greatest irregularity in prices has been noticed.

The over-coating market has been more than usually quiet, the principal business having been done on plain faced goods in coverts and kerseys.

The notable development of the season has been the great number of instances in which manufacturers who formerly devoted their entire attention to the making of men's wear goods have put their looms on goods suitable for the skirting trade.

There has been a marked increase in the demand for medium and heavy weight skirtings, although the extreme heavy ones of last season are not so popular. The short walking skirt seems to be coming more and more into popular usage and there has been a marked scarcity of brown, grey and oxford cotton warp friezes and meltons in 16 to 20 oz. weight goods, selling at from 37½ cents to 60 cents per yard.

Camel hair effects and cheviots in all wool goods are also in fair demand, more particularly in blacks and navies, and the manufacturer who is equipped to turn out goods of this description need not worry as to how he is to dispose of his product.



In higher grade goods all wool fabrics with woven chalk line effects have been the favorites. One of the most successful fabrics of the season has been a line of goods of this description sold by Fred. Almy & Co., at $1.25 regular.

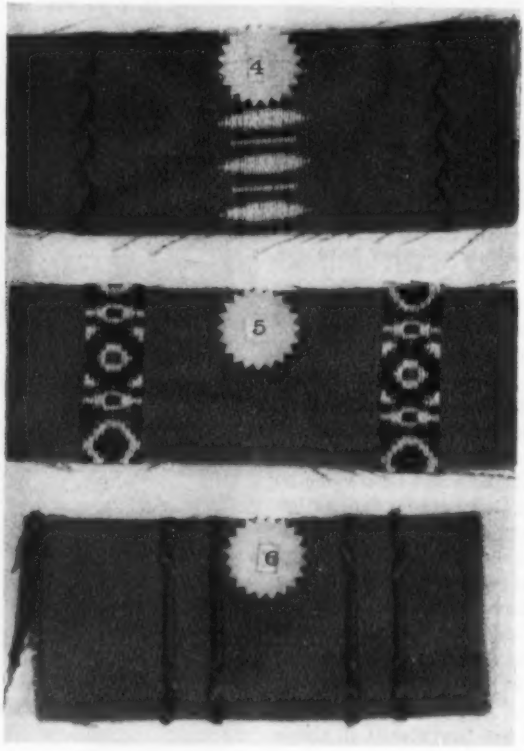
In dress goods fancy striped waistings have been a strong feature of the

season, and the volume of business done on goods of this description has been exceedingly large. This is a fabric for the fall season only, although last spring was an exception to the rule and considerable activity in this direction was in evidence until late in the season, and it is predicted that the demand which is so strong at the present time will continue well into the spring season of 1902.

Figs. 1, 2 and 3 illustrate three styles, which have been excellent sellers at 37½ cents. The style illustrated in Fig. 4 has sold freely at 47½ cents, and Figs. 5 and 6 at 50 cents represent two patterns which have been sold several weeks in advance throughout the entire season.

In still higher priced goods corded effects with woven stripes, as illustrated in Figs. 7 and 8, seem to have caught the popular fancy and have been the freest sellers. All of the above are 27 inch, all wool goods with woven mercerized stripes, and are from the line of Bockmann & Co.

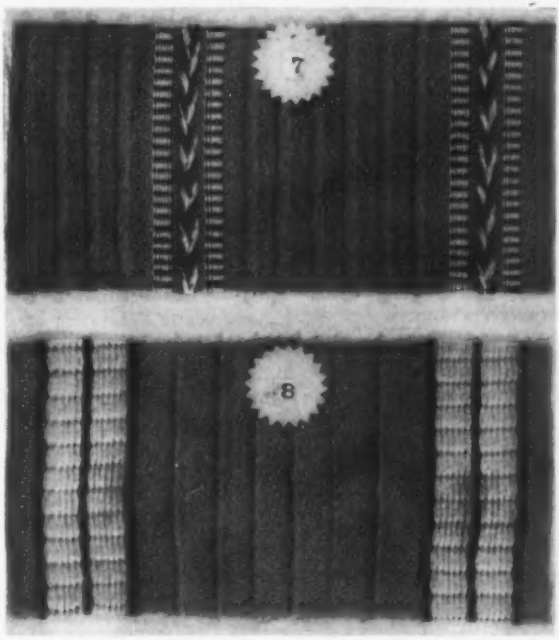
In light weight wool dress goods for the present season the demand has been largely on medium and high grade venetians, also soleils and high satin finished fabrics of this description. The demand has been altogether on plain fabrics with not the slightest indication of a tendency towards a return to fancies.



Plain colored canvas weaves and hop-sackings in all wool goods ranging in price from 65 cents to $1.25 have been the latest development, and a strong demand for this class of goods exists at the present time.

Lines of spring dress goods are being put into shape and some collec-

tions of foreign goods have already been shown and orders booked, although the volume of business done has been comparatively small. It is a noteworthy fact that the spring dress goods season is becoming less and less of a feature in the manufacturer's reckoning. The change from heavy weight goods to the very lightest weight wash fabrics has been so abrupt in recent seasons as to leave no opportunity whatever for the selling of light weight dress goods, except for evening wear on dress occasions.



The Waste End Conveyor and the Government.

There is such a thing as ignorance in the right place. A government inspector in a woolen mill making army goods recently furnished a case of ignorance in the wrong place.

This sapient guardian of the people's interests discovered that the "waste ends" on the finisher card were being conducted in a most secret and suspicious manner back to the first breaker, and there run into the card to be worked into the stock.

These ends were drawn stealthily by a current of air through a pipe and thus the Government was defrauded!

The inspector went post haste to Washington, reported the nefarious plot and the manufacturer was confronted with the charge. The matter was heralded far and wide in the daily press. One paper went so far as to publish illustrations of the card, showing the manner in which the "shoddy" was secretly introduced. Undoubtedly this firm, who occupy an honorable position in the trade, were assumed to be defrauders of the Government by most readers of the press articles.

This occurred months ago. An investigating committee of six, appointed by Government, have just made a report. Five of them exonerate the firm. The sixth member declined to sign the report! This incident is an instructive illustration of the risks involved in the manufacture of Government goods.

NEW ENGLAND COTTON MANUFACTURER'S ASSOCIATION.

Semi-Annual Meeting at Niagara Falls, Sept. 25 and 26, 1901.

The 71st meeting of the New England Cotton Manufacturers' Association was held at Niagara Falls on September 25 and 26. A large number were in attendance and much interest was shown in the proceedings. It was intended to hold the first session at the International Hotel, but owing to the crowded condition of this house, it was decided to meet at the Opera House.

An unavoidable delay in calling the meeting to order, caused by a defect in the lighting arrangement, prevented Mayor Butler from personally delivering the address of welcome, but President Fish of the Association delivered the mayor's greeting to the members.

PRESIDENT'S ADDRESS.

President Fish then delivered his address, which was of a high character and called forth many favorable comments. He said:

Gentlemen: I regret very much that the delay in lighting the hall has prevented you from hearing from Mayor Butler's own lips, his cordial welcome to Niagara Falls. The mayor was compelled to leave on account of a previous engagement, but told me to extend to you in his behalf his welcome and to assure you that during your stay here you were to have the "freedom of the city."

From time immemorial old Niagara has thundered on, dashing itself to pieces against its own solid foundations, an awe-inspiring example of uncontrolled energy.

It still thunders on, but bridled and saddled and under the perfect control of man, it patiently turns the wheel of industry—white coal consumed by water wheels.

It is well for us to assemble at this place and we thank kind Providence for guiding us aright.

You may, your Honor, be sure that we appreciate your welcome, and the many advantages which this far-famed locality affords.

Gentlemen of the New England Cotton Manufacturers' Association: It now becomes my pleasant duty to welcome you to the seventy-first meeting of this Association. Thirty-six years ago the New England Cotton Manufacturers' Association held its first meeting at Young's Hotel in Boston, having at that time a membership of forty-four, representing four States: Maine, New Hampshire, Massachusetts and Rhode Island.

Today we meet with a membership of six hundred and forty-four, representing twenty-one States, besides England, the Provinces of Ontario, Quebec and New Brunswick.

It would seem, therefore, that we have really outgrown our name "The New England Cotton Manufacturers' Association," and sooner or later it may be desirable to consider the advisability of adopting a new name, which will indicate, in a way, our broadened boundaries and our broadened influence.

We must in the end consist of one mighty organization, extending from the factories of the far North to the factories of the extreme South, and from the Atlantic to the Pacific.

As we continue to increase our boundaries and our membership, so must we increase our scope of usefulness. The ideal cotton manufacturer of the future, and I may say of today, is one who not only understands the arts of spinning and of weaving the cotton fibre, but is also proficient, at least to some extent, in the different branches of engineering. He must understand excavations, foundation work, and construction of all kinds. He must be able to figure for himself the strength of materials. He must be able to estimate the power required, and the power consumed. He must know the water-wheel, the steam-engine, and the application of

gas, compressed air, and electricity; and so it is that the cotton manufacturer must also be, in a way, a mechanical engineer, an electrical engineer, and I believe in most localities a knowledge of political engineering will not come amiss.

In following out this thought, I would recommend most strongly the fostering of our technical and textile schools and colleges, and the encouraging in every way possible the boys and young men in our factories, giving to them opportunities for study and investigation, not only in the line of cotton manufacturing, but also in the different branches of mathematics and engineering.

I do also recommend that the policy already inaugurated by former governors of this Association be approved and encouraged, and that we may have as a part of our records many papers and discussions upon the engineering side of cotton manufacturing.

Why should we not consider and discuss the handling of coal, the operations in the boiler house, the boiler itself, the steam engine, the belts and ropes which transmit the power, the electric generator and motor, the best forms of construction, the best methods of ventilation, etc.? Is there any class of men on the face of the earth who have more to do with these things, and who ought rightly to know more about them?

Let us then abolish entirely the old idea that a cotton manufacturer is a "spinner of cotton" only, for it has come to pass that to do his whole duty he must be everything, even to judge advocate.

This Association is in a most sound and excellent condition, and is certainly worthy of strong and aggressive assistance, if I may use the expression, from each and every member in everything.

We must be proud of our Association, proud that we are cotton manufacturers and members of one of the best and most powerful manufacturing associations in the world, and, as such, we must make our influence felt.

The interesting and beneficial meetings are the ones full of discussions.

The value of a paper, no matter how well written, often lies in the discussion which follows.

I am heartily in favor of the presentation of papers by titles or in the abstract, giving in this way more time for the discussions.

Gentlemen: I regret that I am unable to congratulate all of you, or congratulate you as a body, upon a profitable and satisfactory business for the year just past, but I can and do congratulate you upon the courage you have displayed and the glorious effort you have made to stem the ebbing tide, and hold yourselves in position to take ready advantage of the good times which are soon to come, when the American manufacturer will obtain for himself his just share of the mighty markets of the world.

Gentlemen of the Association and Friends,—No word of mine at this time can add to the heartfelt tribute which this nation has paid to him, who so short a time ago on this very spot, this Fairy City which we are about to visit, fell at the hands of the miserable creature for whom the word "assassin" is much too pure and too honorable.

That his people loved and admired him, and that they trusted him and leaned upon him, was made manifest not so much by the outward expressions as by the silence and the deep sorrow which pervaded every home in the land, while reverently and tenderly they bore him from this, the scene of his martyrdom, to the old Ohio home. And although time tempers the poignancy of our grief, the memory of President McKinley will always be toned with sadness, while the story of his pure and noble life and his heartrending and untimely death has become a chapter in the

history of our country, to be handed down from generation to generation, never to be forgotten as long as this world may last.

Less than a year ago, we as guests honored by a special invitation, visited his official home and felt the pressure of his hand. Tomorrow we visit the spot where he was so foully murdered.

Would that we had a law so just that to such creatures, be they anarchists or be they not, a law so just that the whole world will shudder at their swift and terrible end, while their names, like their miserable remains, be flung forever into oblivion!

I thank you for your kind attention and wish for you all a most pleasant and most profitable meeting.

The first paper was read by Robert H. Thurston, A. M., LL. D., on "The Manufacturing Industries; Their Relations to National Position and Progress." It was listened to with close attention. The next paper was by Hachiro Fukuhara, Tokio, Japan, and entitled "The Past, Present and Future of the Cotton Industry in Japan."

Mr. Fukuhara is living in this country for the purpose of studying our commercial and industrial methods. Although he has studied the English language but two years, his address was delivered in clear and forcible language, and he received from beginning to end the close attention of his hearers, and was heartily applauded at the close. In concluding this paper the speaker said:

From the preceding statements you should be convinced that the advantages of Japanese cotton mills are very slight as well as temporary when we compare with your country which has vast stores of raw materials, skilful and intelligent labor, cheap capital and perfect machinery. Especially the South which is destined to become a cotton manufacturing centre of the world has many advantages over Japan.

But remember, gentlemen, I am not in any way a pessimist. I have confidence that Japanese cotton mills may excel the Bombay mills which are mostly operated by Hindoos, Parsees, Mohomedans and Hebrews, and that the requirements in Japan as well as other oriental countries in the line of cotton fabric, are large enough to absorb all products of our country.

Before concluding this short sketch of the Japanese cotton industry I would say that cotton manufacture in Japan will be improved in many ways if both the government and the leading men of the country encourage the trade. But there is no promise of a rapid growth in the future as they have just experienced over-production in the line of coarse yarn. I predict, therefore, that the future development of the Japanese industry will be slow but sure and that the number of establishments will decrease for the purpose of forming combinations for controlling products and prices and reducing the expenses of management.

Finally I ask you, gentlemen, why do you not try to export your products to my country where English made goods are consumed to a great extent?

I know you are striving to promote the trade with China, which is the largest market in the world, and that you were successful in displacing the English made goods in that market to a considerable extent.

But I do not know the reason why you neglect the "Island Empire of the East" which has 45,000,000 souls who wear cottons or silks almost exclusively.

Do you think Japan manufactures cotton goods for herself and does not need any foreign goods? No, indeed!

We have manufactured lower grades of yarn and little of cotton goods. At the same time we are importing English goods to a great extent.

Do you not think you can undersell the Manchester goods in Japan? I think if you can undersell the English trade in China, you can also do the same with the finer yarn and lighter goods in Japan.

When I was in my country I saw a

variety of English cotton yarn and goods in the commercial museums as well as in dry goods stores in the various cities.

But I never saw American goods except a few samples of heavy goods. This led me to think that the United States manufactured coarse goods only. It was, therefore, quite an astonishment to me to see the variety of fine goods in this country and it was beyond my expectation, and I am now inclined to believe that the United States, which is the smartest advertising nation in the world, is not the smartest advertiser in the oriental market.

The pressing necessity of the American manufacturers is to secure the market for the finer grades of cotton goods, because all oriental countries except Manchuria want finer yarn and lighter goods.

I would advise, therefore, that you send a special commissioner to my country as well as to China to make investigation of the market.

I have never seen a consular report that has shown the sharp and practical mind that is necessary and any insight into the market. It is, strange to say, that although Japan has the warmest feeling of friendship toward this country and the people are greatly in favor of American products and ideas, alas! she is ignorant about the cotton goods of the United States, just as American mill owners are ignorant about the Japanese market.

We have a commercial museum attached to the college at which the samples of goods and devices of machinery are explained to the student and exhibited to the public.

To this museum the Germans send a dye-stuff; the pupil is asked "What is this?" he says "Dye-stuff." "Where can you get dye-stuffs?" he says "Germany." Manchester sends machinery that is exhibited there. The student is asked, "Where can you get machinery?" and he says "Manchester." If you send your goods I am confident that when the student is asked. "Where can you get the best cotton goods?" they will answer "America."

Philip P. Barton of Niagara Falls, N. Y., exhibited a number of stereopticon views of the Niagara Falls Power Co.'s plant, with which he is officially connected. He explained the construction and operation of this plant to his hearers, and prepared them for a much better appreciation of this wonderful example of engineering upon the visit which the party made to the power house itself after the meeting adjourned. Trolley cars were awaiting to conduct the party to the power house, where they were given a good opportunity of observing the method of "harnessing Niagara."

We shall not attempt any detailed description of this plant at the present time. At present ten water wheels are generating approximately 50,000 H. P. These wheels have been sunk about 130 ft. below the level of the Niagara River. They are operated independently and connected by hollow shafts with electric generators at the ground level. This electricity is later converted into power to operate the street car lines in many large manufacturing plants in the village of Echota near the plant, and also in Tonawanda, Buffalo and other localities. The party was conducted by an elevator to the water wheels, and given an opportunity to inspect this subterranean part of the works. In addition to the ten wheels, there are pumps placed in recesses and driven by direct water power to supply the water works of Niagara Falls.

Another building is in process of construction near the present one, in which it is proposed to generate 55,000 H. P. with eleven water wheels. Although facilities have been provided for utilizing the water power direct without first converting it into electricity, it is stated that up to the present time only two concerns have availed themselves of this method, preference being given to first converting the power into electricity, and

after transporting it to desired locality, reconverting it into power.

The second session of the Association was held at the International Hotel, Wednesday evening. The first paper was entitled "The Cotton Fibre in Some of Its Phases." In the absence of the author, Henry G. Kittredge, Boston, Mass., the paper was read by Secretary Woodbury. It was followed by an animated discussion.

The following paper, entitled,

THE ROUND BALE AT THE MILL,

by W. S. Southworth, Lowell, Mass., was read by the secretary.

I give the following results of experiments made, with as little of comment or explanation as possible. They are not selected statements, but cover all the tests made; had there been any thought in my mind of future publication, I should doubtless have been at more pains to repeat and amplify them.

COMPARISONS OF TARE, ROUND-LAP, VS. SQUARE BALE.

December, 1897.

Thirty round bales, gross 12,643 lbs.; tare 148½ lbs., 1.17%.

Forty square bales, gross 20,715 lbs.; tare 892¼ lbs., 4.31%.

April, 1900.

Gross weight (round) 4518 lbs.; tare 34½ lbs., 0.76%.

Gross weight (square) 4850 lbs., tare 201¾ lbs., 4.16%.

The next comparison is on a larger scale, and covers other matters as well as tare:

February, 1901.

Two hundred round bales; invoice weight, 52,627 lbs.; re-weight 52,652 lbs.; 25 lbs. gain.

One hundred square bales; invoice weight, 53,589 lbs.; re-weight 53,107 lbs.; 482 lbs. loss.

Tare on round bales, 437 lbs., or 0.83%.

Tare on square bales, 2070½ lbs., or 3.90%.

Value of round bale sacks, $3.82.

Value of square bale sacks and hoops, $12.12.

A higher price for the round bale covering could probably now be obtained. Assuming for the sake of comparison that the price of the cotton was ten cents per pound in each case:—

Net lint from round bales, cost, 10.072 cents per lb.

Net lint from square bales cost, 10.476 cents per lb.

Difference favoring round bales, 0.404 cents per lb.

Two comparisons have been made to show the relative amount of moisture. One bale of each kind was taken at random; the net weight was ascertained, and the cotton was then thrown loosely into bags, which remained in the opening room undisturbed for ten days before re-weighing. The loss by drying out was:—

January, 1900, round cotton, 1.27%; square, 2.28%.

March, 1901, round cotton, 1.21%; square, 2.52%.

Of course this comparison is on too small a scale to justify definite conclusions; but those who have traveled in the cotton country will be most likely to accept the results as within the truth,—having seen for themselves the prevailing custom of exposing to the weather indefinitely the large, soft bales turned out by the ordinary gin.

If these percentages of shrinkage are applied to the two lots of cotton compared in the experiment of last February, we obtain a corrected cost, using the assumed original price, as follows:

Net lint from round bales, dry, cost 10.198 cents per lb.

Net lint from square bales, dry, cost 10.734 cents per lb.

Difference favoring round bales, 0.536 cents per lb.

As bearing on the question of storage space occupied, and of strength required in store-house structures, I will say that I have, without much effort, piled round bales in such a manner as to put 24.307 pounds weight into 900

cubic feet, measuring "over all." I calculate that a load of 225 pounds per square foot could be put upon the floor of a store-house, given 8½ feet clear height.

A discussion followed on the subject of the round bale and its advantages or disadvantages to the manufacturer. This method of baling cotton was defended and also called into question by a number of speakers; no definite conclusion was reached, although much interest was shown in the statements made for and against the bale; it is undoubtedly a subject which should receive further attention. In this connection, we call our readers' attention to an article in the September issue of the Textile World, which gives the results of extended inquiries made by the Ost. Wollen und Leinen Industrie of Wien, Austria, among the European manufacturers upon the subject of the round bale. As full 90 per cent. of round bale cotton is used on the Continent of Europe, Continental manufacturers are in a much better position to judge of the merits of this bale than are American manufacturers.

The next paper was by Edward W. Thomas, West Durham, N. C., and entitled "Overworking of Cotton in the Card Room." The radical position taken by Mr. Thomas evoked considerable discussion. Next came a paper entitled "Cotton Waste," by Col. Samuel Webber, Charlestown, N. H.

The third session was held Thursday morning at the hotel, and was opened by reading the following interesting paper by Lewis T. Houghton, entitled,

"THREAD BOARDS AND GUIDES,"

who explained the thread board of which he is the inventor.

In looking for information in regard to thread guides one thing which has interested me very much is the wide difference in opinion which prevails among the expert cotton spinners in regard to the shape for the eye of thread guides. A manufacturer of thread guides recently made the remark that there were as many different thread guides as there were superintendents of cotton mills (very likely he exaggerated a little). The principal point of disagreement that I have found is that one wants a straight back for the guide so that the thread will vibrate and not wear a groove in the guide. It is also claimed that this vibrating of the thread permits the twist to run up to the "bite of the roll" better, while others claim that these advantages are offset many times over by the extra breakage of travelers and the more and uneven wear of the rings caused by this vibrating thread. It would seem that a matter like this could be and should be settled by so exhaustive a trial of the different shaped guides that there could never be any more doubt as to which was the best shape or else demonstrate that the shape was immaterial. With only one standard guide to make, their cost would be less to manufacture.

In an article on the Management of the Spinning Room, in the only reference to thread guides, it states that the guide should deliver the thread exactly over the centre of the spindle. This requires a very fine adjustment for the thread guide. The only method of adjusting the guide in the past (of which I have any knowledge) is for the guide to be screwed into a wooden block, which has proved very unsatisfactory and is the reason for some of the different size thread guides, for as the guide becomes loose in the thread board another guide of larger sized wire is used, or the hole is plugged and glued until the thread board is put out of business.

When the Pontiac Guide is used it certainly should be accurately adjusted and also held solidly in place or the kink arrester will either break the thread when it is running all right or it will fail to catch the broken end of thread when an unavoidable break occurs and a series of spindles may be put out of commission. I recently

saw a practical illustration of this while watching the work of a spinning frame. A thread broke, which was instantly followed by the five threads to the left in quick succession. An investigation showed that the guide on No. 1 spindle was turned down so far that the kink arrester end was almost in line with the centre of spindle, which was the cause of the first break (as the thread broke repeatedly in trying to piece the end without moving the guide); the next four guides the kink arresters were turned out so nearly horizontal that they failed to catch the ends as they broke. The guide over the sixth spindle was in its proper position and the break was arrested. Here were six spindles stopped work for the fault of an improperly set thread guide.

The overseer said that this was of frequent occurrence; that loose and improperly adjusted guides were a continual source of annoyance and loss, that it was almost impossible to keep the thread guide in place after it had once been moved. I have been told that some mills employ a man whose whole time is spent in looking after the adjustment of the thread guides. Evidently these mills realize the loss caused by loose and badly set thread guides, and judging from what frames I have seen, it would pay more mills to detail a man for this purpose or get a thread board that will hold a guide so solid that it cannot be disarranged after adjusting.

In the article previously alluded to it states that "The breaking of ends is a matter for serious consideration." Is there a more promising place to begin this consideration that this subject of Thread Boards and Guides?

The question arises, What are the requirements for a satisfactory thread guide (omitting the shape and the size of the guide eye about which there are so many opinions)?

There are three things that are certainly requisite, that the guides in present use never had.

First, I would have permanence. When the guide is once adjusted, it should be so solid that there never need be more thought or care given them.

Second, easy and accurate adjustment; easy, for if this adjustment require work to do it, the chances are, it will not be done as it should be.

Third, the thread guide should be hardened, to prevent the grooving of the guide, as the grooving of the guide is a cause of broken ends. A remark that the grooving of guides was the cause of many ends breaking, that hardening had been tried and abandoned an account of the guides breaking, when bent for side adjustment, started a train of thought that resulted in a steel thread board and guide, and which in the opinion of many expert cotton spinners, fills all the requirements of a thread board and guide; of its merits or advantages you are to judge.

This thread board is made from sheet steel, in sections of eleven or twelve thread boards each, according to the gauge of frame. These thread boards interlock with a steel back strip, making a very strong construction. This back strip fastened to the thread board rail, prevents the rail from sagging, or warping. (This rail may be reduced in width considerably and still be amply strong.)

The wire guide has its body or stem made irregular in form, which, when properly fastened, prevents it from turning or becoming displaced; by loosening a nut the guide wire can be quickly and accurately adjusted and fastened so solid that the adjustment cannot be changed.

The thread guides are specially hardened and polished and will wear a long time without being grooved, whether the thread vibrates or not. The unqualified approval which this thread board has received from experts in cotton spinning, especially from overseers and second hands who have given it a practical trial, warrants the statement that no one considering the purchase of ring spinning

frames can afford to make their specifications without thoroughly examining this device. Here are some samples which you are invited to critically examine.

The members showed much interest in the subject, and following the paper were many expressions of favorable opinion in regard to the device. The next paper was entitled "Knitting Industry in the United States," by Alfred Deabill, Lowell, Mass., and which appears in another part of this issue. "The Evolution of the Slubbing Frame," by Frank P. Bennett, Jr., Boston, Mass., was the next paper. It was followed by one entitled, "The Abuse of Oils in Cotton Mills," by H. P. Meikleham, Lindale, Ga.

At this meeting a proposition to erect a memorial to Eli Whitney at Rock Creek, Ga., where his cotton gin was first operated, was approved, and it was decided that it should be in the form of a suitable bronze tablet. A committee was appointed to receive contributions for this memorial to a man whose invention has proved of such benefit not only to this country, but to the inhabitants of the whole world. As it has not been the policy of this Association to use the Association funds for such purposes, it was decided that the expense of erecting this memorial should be made by voluntary subscriptions from the members and others. President Fish then read a letter from W. Firth, in which he offered to purchase a scholarship in one of our textile schools and present the same to the Association. On motion of Mr. D. A. Tompkins, Mr. Firth's offer was accepted with the hearty thanks of the Association. After adjournment the party were photographed on the hotel steps, and our readers will find this photograph reproduced on another page.

The fourth session was held on the grounds of the Pan-American Exposition in the New York State Building. President Fish called the meeting to order and introduced Mr. Milburn, president of the Pan-American Exposition, who addressed the meeting. Following this address those present were given an opportunity to greet Mr. Milburn, and officials of the Exposition and Buffalo Merchants' Exchange.

The fifth and last session was held at the International Hotel on Thursday evening. The first business was the election of new members, which resulted in the choice of the following gentlemen:

For Honorary Membership:—Henry Smith Pritchett, LL. D., President Massachusetts Institute of Technology, Boston, Mass.

For Active Membership:—Frederick K. Allen, Camden, Maine; Samuel A. Carter, President Gate City Cotton Mills, Atlanta, Ga.; Sidney Coolidge, Treas. Stark Mills, Boston, Mass.; Benjamin M. Earle, Walnut Hill, Mass.; William Halliwell, Woonsocket, R. I.; A. G. Harris, Supt., Upper Troy, N. Y.; Scott Maxwell, Supt. Lanett Mills, West Point, Ga.; Robert G. McMeehan, Supt. Hamlet Textile Co., Woonsocket, R. I.; E. P. Morton, Agt. Stevens Linen Works, Webster, Mass.; Albert W. Noone, Peterboro, N. H.; B. L. Stowe, Jersey City, N. J.; S. Willard Thayer, Treas. Dexter Yarn Co., Pawtucket, R. I.

For Associate Membership:—Albert C. Case, Pres., The American Cotton Co., 25 Broad St., New York; E. W. Davenport, Supt. Crompton & Knowles Loom Works, Providence, R. I.; Lewis T. Houghton, Worcester, Mass.; A. H. Howard, Worcester, Mass.; Lawrence M. Keeler, Whitin Machine Works, Whitinsville, Mass; Fay H. Martin, Prop. The Dunn Flyer, Hyde Park, Mass.

H. F. J. Porter, New York City, delivered a very interesting lecture on "Steel Forgings for Factory Engines," which was illustrated by numerous lantern slides, showing the different processes in the manufacture of steel forgings. Mr. D. A. Tompkins of Charlotte, N. C., who is to be superintendent of the Cotton Palace at the Charleston West Indian Exposition, then delivered an address on early Southern mills. The next paper was entitled "The Possibilities of Trade Expansion in Cotton Manufactures," by William Whittam, Jr., Woonsocket, R. I. Following this came the paper by Col. E. D. Meyer, entitled "Modern Boiler Problems," which appears in another part of this issue. Secretary Woodbury then read a written argument based on Col. Meyer's paper, which was answered by Col. Meyer at some length. The meeting then adjourned.

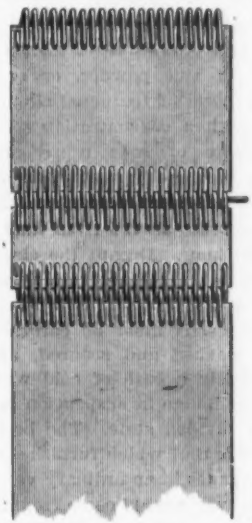
The members of the party availed themselves of the opportunity to visit the Pan-American Exposition and Niagara Falls, and many remained after the close of the convention in order to take in the points of interest.

MEETING OF THE NEW ENGLAND COTTON MANUFACTURERS' ASSOCIATION. GROUP AT THE INTERNATIONAL HOTEL, NIAGARA, FALLS.

The Jackson Belt Lacing Machine.

Lacing belts not only requires considerable time, but also much experience and skill on the part of the lacer, and when a belt breaks during the working hours, necessitating a shut down of one or more machines, the time required for the repairs is very expensive to the mill owner, as it may be necessary to keep a large number of hands idle while the repairs are being made. For this reason the belt lacing machine built by the Diamond Drill & Machine Co., Birdsboro, Pa., will greatly interest manufacturers.

It is claimed that this machine will not only save money in the cost of lac-



ing, but reduce to a minimum the loss caused by the stoppage of machinery. It is stated that a 6″ belt can be laced complete in three minutes. A wire coil clasp lacing is used, which, it is said, costs 75% less than any other lacing, while lasting three times as long. It is stated that the cost of lacing a 5″ belt is but one cent. The machine which is shown in the accompanying illustration will lace belts of any width up to 24″.

Another advantage claimed for the splicing made by this machine is the great flexibility of the joint. Actual tests show that the splicing of a 2½″ belt laced on this machine with the wire coil, will stand a strain of 1900 lbs. without breaking or pulling apart. The lace is the same on both sides of the belt, and is even with the surface, as shown in the illustration, thus causing the belt to run with the smoothness of an endless belt.

Another advantage is that the belt can be connected or disconnected very quickly. Six thousand inches of coil lacing are given with each machine, and it is said that this is equal to $75 worth of lace leather, which practically pays for either of the two smaller size machines.

The lacing machine is simple in construction, and the rolls and gears are made of hard tool steel. All the parts are interchangeable.

It has been adopted by the United States Government, and is now used by the Brooklyn navy or Watervliet Arsenal and other government works.

The manufacturers would also be

pleased to refer interested parties to a large number of manufacturers using this machine in various parts of the country, among whom may be mentioned Brown & Sharpe, Providence, R. I.; William Cramp & Sons, Philadelphia, Pa.; Carnegie Steel Co., Pittsburg, Pa., and many others.

The device is protected by patents and further information can be obtained from the Diamond Drill & Machine Co., Birdsboro, Pa.

White Woolens.

We are indebted to Hofmann of Dresden for an interesting communication upon the processes employed in obtaining a pure white on wool.

As is well known, it is impossible, even with the most energetic bleaching agents, to remove from wool a slightly yellow tinge which is readily seen if bleached wool is compared with bleached cotton or silk. When attempts are made to hide this shade by means of a complementary blue, as is done on cottons, curtains, paper, etc., bad results are obtained.

Many attempts have been made to give the wool a brilliant white by covering it with white substances such as carbonate of magnesia, for example, and this was used for some time for this purpose. But its use has been abandoned on account of the dust which comes from the wool when the goods are in store. It has also been proposed to cover the wool with cotton by dissolving the cotton in ammoniacal copper solution, impregnating the wool with the solution and then fixing the cotton on the wool by means of acid. An ether bath has been finally applied to render the cellulose opaque.

Hallab reaches the desired result by the use of hydrosulphite of soda and indigo. The effect is a double one; the hydrosulphite acts as an energetic bleaching agent, and on the other hand it renders the indigo which is deposited mechanically upon the fibre soluble and causes it to penetrate the fibre. By subsequent oxidation in the air, the indigo comes out with a complementary blue shade which neutralizes the yellow of the wool. It is doubtful, however, if an absolutely perfect neutralization of the yellow can be reached with a blue pigment in this way.

As we have said above, the numerous experiments with different coloring matters, such as ultramarine, sulphindigotic acid, aniline blues, etc., have failed to give satisfaction.

The following receipt for the use of hydrosulphite is taken from the Deutsche Farb.-Zeit. The hydrosulphite of soda should be made just before it is to be used. Digest seven parts of zinc powder, or twenty to thirty parts of feathered zinc or sheet zinc with a concentration solution of bisulphite of soda representing 100 parts of the dry salt. This must be done in a closed vessel, and the mixture must be stirred from time to time for an hour. Decant the clear liquor which contains the hydrosulphites of soda and zinc.

The goods must be carefully purified, washed and scoured, and then worked in a bath of cold water containing indigo in suspension in a very finely divided state. The best indigo to use is that which furnishes reddish-blue shades in an ordinary vat.

The wool should come from the bath evenly covered upon the surface with particles of indigo and it is then plunged into the bleaching bath. This bath is composed of water and of the hydrosulphite liquor described above, prepared so that the bath will stand from one to 4 degrees B. While the wool is passing through the bath add a quantity of acetic acid equivalent to the hydrosulphite present. The goods must be properly worked in the bath so that there may be no unevenness in the reduction of the indigo.—Moniteur Scientifique.

Chemical Instruction and Industries in Germany.

The preeminence of Germany in the chemical industries is admitted by all. This superiority is due to thorough educational methods. The development of the coal tar dyestuff industry in Germany is a striking illustration of German success in these industries.

The British consul at Stuttgart has recently made a report upon the chemical schools of Germany, in which he says that at first the German universities were situated in small provincial towns. These institutions commenced to devote attention to chemical technology about the middle of the 17th century, and which may be said to have laid the foundation of the German chemical industry of the present day.

The advance in industries and trade, however, rendered the creation of special technical schools necessary, and these were accordingly established, at first as polytechnic schools, and afterwards as technical high schools. They were founded during the nineteenth century, and are situated—with the sole exception of Aachen—in large towns or in capitals of States.

At the time of their foundation they were principally intended for the study of architecture, engineering, and mechanical technology. Since then the study of chemistry has been greatly developed and specialized, and various other courses have been added, such as forestry, surveying, electricity, photography, naval architecture, and pharmacy.

The study of pure and technical chemistry and technology was, during this time, by no means neglected at the other German universities. The first public chemical laboratories for the general use of students were opened at Gottingen in 1809 by Prof. Strohmeyer, and at Giessen in 1827 by Dr. Justus von Liebig.

The opening of these public laboratories forms an important epoch in the development of chemical instruction in Germany. During the winter term of 1841 no less than 50 students of chemistry were working in Liebig's laboratory. His example soon found imitators and adherents, and at the present time nearly all the German universities are equipped with more or less perfect chemical laboratories and staffs of professors, lecturers, and trained assistants.

It has not been found necessary for the purposes of this report to mention the details of study in the chemical departments of the schools, as their courses of study are specialized according to their various needs: Mining academies, agricultural colleges, veterinary high schools, forestry academies, building and engineering schools, military technical academies, industrial schools, special technical schools, and trades' schools.

As at other universities, students are not required to attend all lectures, but only those which concern their special branch or branches of chemistry. All the remaining time is devoted to practical work in the various laboratories.

Generally speaking, the fees are somewhat higher than at the technical high schools. The fees for the Berlin University are $29 per term for chemical laboratory, and $24 for lectures. For the majority of German universities $24 for laboratory work, and $15 to $19 for lectures may be assumed as a fair average per term.

The following is a fair estimate of expenditure for the study of chemistry per annum:—

Expenditures for One Term.

Eight courses of lectures of one hour each at $1.00 per lecture	$ 8.00
Additional lectures	2.50
Chemical laboratory	20.50
Apparatus, chemicals, books, etc.	12.00
Total	$43.00

For the whole year it gives $86.00. This estimate refers particularly to

the Berlin Technical High School, and might be easily reduced to $73 for Hanover and Aachen and the non-Prussian technical schools. For this small amount the finest instruction and the best equipped laboratories are open to the German student. Annual expenditure for living is estimated at $365.

According to Professor Fischer, Germany possessed in the year 1897, 4000 thoroughly-trained chemists who had passed through the full courses of the universities or technical high schools. The number for the present year may be estimated at 4500.

This estimate applies to chemists residing in Germany; the number of German chemists in foreign countries ranges probably from 700 to 1000; it does not include, further, professors, lecturers, and assistants at universities, technical high schools, etc., and private chemists.

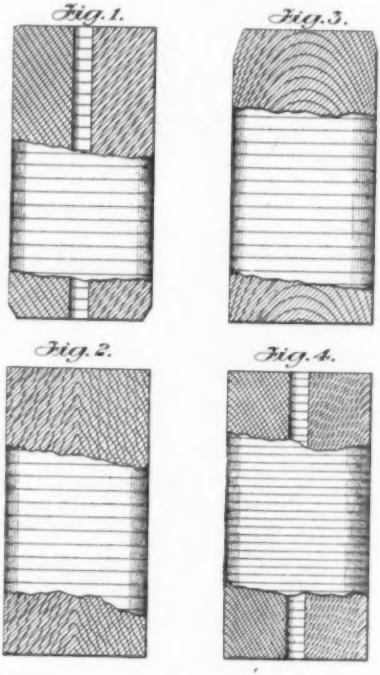
Chemical industrial circles in Germany are by no means satisfied with the great progress and measure of success already attained, and are actively endeavoring not only to maintain but to increase the present facilities for technical education.

A visible result of the success of their efforts is shown by the decision of the Prussian Government to erect two new technical high schools in Prussia—at Dantzig and Breslau. The Dantzig school is also in process of erection, and will devote special attention to the study of naval architecture and engineering, for which subjects the facilities hitherto afforded have been extremely inadequate. It will for the present be equipped for 700 to 800 students. The annual financial contribution of the Prussian State will amount to $90,000, and the cost of erection to $1,000,000, without taking into account the further expenditure for internal fittings, apparatus, machines, collections, etc.

A Round Cotton Bale.

The illustrations Figs. 1, 2, 3 and 4 show a method of baling fibrous material in cylindrical form, by which the inventor claims that the expansion of the bale when the binding wires are broken is prevented.

He states that material is wound in a continuous spiral, but in which the layers are not superposed, but wound one within or one without the other, so as to produce in effect a series of nested layers, each one binding the other whereby expansion



of the bale longitudinally is prevented by the friction of the various layers upon each other. In other words, it is a bale which combines the non-expansive feature of the ordinary convolute bale and the advantages of the spirally-formed bale without the disadvantages of either.

Figs. 1 and 4 are views partly in section, showing bales made with an inverted, substantially cone-shaped abutment. Fig. 3 is a view, partly in

section, showing a bale formed by the use of an abutment substantially paraboloidal. Fig. 2 is a view showing a bale formed with an abutment having a spiral working face.

The bale is formed by material fed through a slot in a conical abutment, the receiver and abutment having a motion, whereby the fibrous material will be drawn in and wound in substantially spiral layers, which are nested one within the other and which bind upon each other to produce a non-expansive bale. As the material is fed in in a continuous spiral and in a plane at an angle to the longitudinal axis of the bale, the effect is to cause each layer to bind one upon the other with such force that the friction between the layers is sufficient to prevent longitudinal expansion. The bale thus consists of a series of nested self-binding layers, the principal advantage of which is that it cannot expand longitudinally; bale-ties may be dispensed with, or, if the bale-ties be used for additional security, the bale will not expand when the ties are broken or the covering removed, while at the same time the layers of material can be readily pulled from the bale when desired. The danger is avoided which at present exists in spirally formed bales, namely, that of the expansion of the bale in a longitudinal direction if by accident or from heat the ties be broken.

Moisture in Indigo.

The suggestion has recently been made by Ch. Rawson that there should be conditioning houses provided for indigo as well as for the textile fibres. It is stated that indigo frequently contains as high as 10 or even 15 per cent. of moisture when unloaded from the vessel. It is then stored, sometimes in damp, at other times in dry rooms, for a longer or shorter time. It is therefore no wonder that the chemist obtains such widely varying results from indigo from the same district.

Four tests of one sample of indigo indicated the presence of 7 per cent. of water and 56 7/10 per cent. of indigotin (including indigo red). A sample of this indigo was then stored for some time in a damp place, and again tested. The second test indicated the presence of 14 85/100 per cent. of water, and 55 per cent. of dyestuff. A third test made at the expiration of eleven days indicated 11 2/10 per cent. of water and 57 6/10 per cent. of dyestuff.

An European Cotton Yarn Mill.

An idea of the machinery and help required for a 20,000 spindle cotton yarn mill in Austria, may be obtained from the following estimate given by a mill superintendent to the Os. Woll. und Lein. Ind.: Machinery: 1 bale breaker, 1 feeder and dust trunk, 1 opener, 6 scutchers, 48 rev. top flat cards, 4 combs with 2⅜ deliveries, 4 coarse flyers, 8 med. flyers, 18 fine flyers, 10 mules with 10,000 spindles, 25 ring frames with 10,000 spindles. The help, excluding general hands, required for operating the above named machinery is estimated as follows: 6 men for machines previous to carding, 2 men and 6 women for cards, 8 women for combs, 30 women for flyers, 32 for ring frames, 5 spinners and 20 piecers and drawers for mules, 4 overseers, 6 for packing room, and 2 shippers.

—The exports of textile machinery in Great Britain for the seven months ending July 31st, 1901, amounted to $13,997,354.04, as compared with $18,271,587.96 in 1900 and $19,697,375.88 in 1899. The share of the United States in 1901 was $1,472,232.40, as compared with $2,029,997.70 in 1900 and $825,223.14 in 1899.

WOOLEN DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

Uniformity in the Mixing of Stock.

Cloth well woven is half finished, and stock well prepared is half spun. The material must be not only well prepared, but uniformly well prepared. The variations in the condition of the raw material frequently cause more havoc than would a lower but more uniform level of conditions.

To illustrate; if the condition of the wool as regards cleanliness stands one week at what we may call 90 while the next week it falls to 80, it would be found impossible to avoid bad work in carding and spinning, because the cards and mules are not adjusted to suit the varying condition. The results would be better with the standard of cleanliness lowered to 70 and kept there, than to have it fluctuate between 80 and 90.

The yarn spun from these varying kinds of stock will vary not only in the ultimate shrinkage in finishing, but also in smoothness, strength and size. These variations will appear in the same piece of cloth, causing rowiness, streaks and an endless number of imperfections.

The advantage of uniformity applies equally well to all other conditions. Better have the average length of the staple kept uniform at ¾ inch than to have it fluctuate between 1 and 1½ inches. If 20 per cent. of water on the stock gives the best results, it is far better to keep the moisture uniform at a point above or below 10 per cent. than to allow it to vary three or four per cent. in different batches.

The writer has been in charge of woolen card and picking rooms for many years, and has had many opportunities of observing the effects of faults in the preparatory and carding processes. These opportunities have come to me by reason of my welcoming the invitation of the mill manager

THE CONFERENCE AT THE TENTER BARS.

to inspect the imperfections in the woven flannels or finished cloth.

By most overseers such invitations are received in about the same manner that they would accept an invitation to be hung. It is somewhat disagreeable to stand before the cloth perch and be stared at by hundreds of weavers or finishing room hands, but in no other way can the full effects at bad work be studied by the carder.

All of my mill experience tends to convince me of the great importance of uniformity in the condition of the stock. This importance is very apparent when making mixtures of different colors, as the following incident will illustrate.

I was working at one time as sec-

ondhand in the card room of a small woolen mill making plain and fancy mixed cloths. These mixtures contained different proportions of white stock, varying from 25 to 80 per cent. The first breaker cards were fed by hand. There were Apperley feeds on both second breakers and finishers, and the cloth was dried out doors on tenter bars, which were in a field in plain view from the mill windows.

From the card room window, I could see the cross streaks on these plain goods as they hung on the bars. They extended from one end of the pieces to the other, and varied in width from one-half an inch to about two feet. They looked positively frightful, for they made the goods poor "seconds."

As soon as a new set of these "barry" pieces were hung out, the finisher would report to superintendent that the goods on the bars were rowy. The latter would come out and inspect them as he passed slowly and thoughtfully the length of the bars. Then he would send for the weaver and confront that overseer with the supposed results of uneven weaving. After the weaver had made as good a defence of himself and his room as he could, spinner and carder would be summoned and held on suspicion.

In the mutual interchange of views, which after resembled mutual recriminations, various theories were advanced to account for the trouble. The friction on the loom might be out of order. The spindle bands were irregular. The size of the yarn was uneven, etc., etc. The weaver counted the picks in two adjacent dark and light bars and found the same number per inch in each place; henceforth this test served him as a clincher when his room was charged with causing the bars.

In the course of a few weeks, the spinner happened to think of a test as to whether tight and loose spindle bands were the cause. He had the places where the filling bobbins were changed carefully marked on a piece of cloth. When this piece appeared on the tenter bars, it was found that two shades had come from one bobbin. This exploded the tight and loose spindle band theory.

It was suggested that the mixing of top and bottom spools might cause the trouble. The order went forth that "tops" and "bottoms" should henceforth be spun and woven separately. Result,—a vast amount of labor and time expended in keeping them separate, and beyond that nothing, as the trouble still continued.

The matter was serious. The mill owners were compelled to decline orders for this class of goods, and the pieces in process were "seconds."

At this time, when the sight of a plain mixed fabric made every overseer feel faint and had the same effect on the superintendent that waving a red flag has on a bull, the picker man came to me one day and said:

"Pete, I believe I know what is causing these streaks in the plain mixtures."

"Well, if you do, you know more than anyone else around this mill."

I looked at him with mingled feelings of amusement and pity, for I had no idea that poor old Jake, the black, greasy old picker man could shed any light on a problem that had baffled everyone else in the mill.

"Well, I'll be hanged if I don't think I have found the cause. I thought I would speak to you first about it, for I feared being laughed at if I told the super or the carder. Come down in the picking room, and let me show you something."

I followed him down, wondering what I was about to see. As we entered the picker room door, a batch containing 40 per cent. white and 60 per cent. black wool was on the floor, one-half of it having been run through the machine once.

"Now, wait a minute," said Jake.

He walked to the delivery side of the picker, took up an armful of picked stock, and turning, carried it to where I stood, and laid it at my feet. Quickly returning to the pile, he seized

another armful, this time from the centre of the pile of picked stock, and laid it beside the first armful.

"There!" he exclaimed, stepping back, "look at that!"

A glance at the two bunches of wool showed that one was of a much lighter shade than the other. It appeared as if one contained fully 25 per cent. more white than the other.

"As you can see for yourself," continued Jake, "these two shades are from the same batch. If they are here in the picked stock, why will they not be in the yarn?"

I recalled to mind the hand feed on the first breakers, the Apperleys on both second breakers and finishers,

"THERE!" HE EXCLAIMED, STEPPING BACK, "LOOK AT THAT!"

and that, with the exception of the mixing of the yarn by the use of three shuttles in the loom, the filling enters the goods in practically the same order as it leaves the mouth of the picker.

"I know," said Jake, "that the work is being rushed too much, but I cannot help it. It takes about 1000 lbs. of stock per day to keep the cards running. The burr picker, mixing picker and rag picker are all in the same room. Running any one of them interferes with the other, and consequently all the work is carried on with a rush. From the picker room window I have seen the streaks in the goods on the tenter bars, and have watched the super and bosses out there looking at them. I knew something was wrong, and when I noticed the difference in the shade in this batch, I made up my mind I had found the cause of the trouble. It's no use saying that I ought to mix the batches more evenly. I haven't time to do it. If I took the necessary time to pick the batches properly, at least one set of cards would be standing all the time, and it would not be long before I would be looking for another job."

As he concluded, Jake picked up two bunches of wool and resumed his work feeding the picker. There could be no doubt that Jake had found the cause of the trouble, and I concluded to try an experiment.

"Jake, let us pick this batch right at all events. I will help you. You have the batch run through once. Instead of carrying it back and throwing the stock helter skelter in a pile to be run through the second time, let us layer it down carefully, and see if we cannot get it even."

We did this, and as the wool was put through the picker for the second time, I collected the light stock that floated to the sides of the batch or clung to the walls of the picker room, and, carrying it back, spread it carefully over that part of the batch that was yet to be run through. When the work was completed, we examined the different parts of the batch, but could not discover much difference in the shade.

I returned to the card room and found that soon after I had left, the carder had been sent for to examine rowy pieces on the tenter bars, and was still out there. In a short time he returned with an unhappy look on his face.

The new batch was put on the cards that afternoon, and by 9 o'clock the next morning, a set of yarn had been spun from it and was ready for the looms. Several cuts were "full" and these looms were started on the new batch. This was making quick time, but quick time was one of the advantages claimed for the continuous feeds on the cards.

In the course of a few days, I met

the finisher in front of the mill. He stopped me, and said hurriedly:

"There are three pieces of style 41 on the bars that haven't one streak from one end to the other. This has been about the worst style we have had. I am going to call out the super to see them."

He gave me no chance to reply, and in a short time I saw the super walking briskly up and down in front of the pieces. Then there was a call for the weaver, who, as I learned afterwards, informed him that the pieces had been woven with the last batch that had come from the spinning room.

Then the spinner and carder were called out, and all hands protested that there had been no change made in the handling of this particular batch. The spinner said, however, that this lot had run better on the mule than the last one.

When the carder returned to the room, his face wore a broad grin, as he said to me:

"Pete, that last batch is coming out as smooth as a ribbon. Not a streak anywhere. I thought those loom fixers would take a tumble after awhile, and fix the frictions on the looms."

I then told him what Jake and I had done to that batch, and explained that I had said nothing before for fear of being laughed at, if the goods came out streaky. The carder said very little in reply. While nominally in charge of the picker room, he paid little attention to it on account of its distance from his room and the fact that the superintendent had taken personal direction of handling the batches before they reached the card room.

The carder reported the facts to the superintendent. A general interchange of views took place. An extra man was set to work in the picking room, and great care taken in layering and picking the batches. A steam jet was placed under the mouth of the pickers and steam blown into the stock as it came from the machine. In the course of a few days, creels were put on the second breaker cards, and a few weeks later, self feeds for the first breakers arrived and were put on the cards.

The goods after that came along smooth and free from streaks. Everyone around the mill knew how the cause of the trouble had been located, and Jake, the picker man, received the entire credit for the discovery as he deserved.

This incident illustrates but one phase of the difficulties resulting from an irregular blending of the raw material. There may be variations in the same batch (as in the case cited), or the different batches may differ from each other. When a certain percentage of low stock (say 40 for illustration), is mixed unevenly in the same batch, one portion may contain 60 per cent., while another has but 30 per cent. of the shorter stock. The batch may then be likened to a rope whose weakest part determines its strength. The material will card, spin and weave as if 60 per cent. of short stock had been used instead of 40 per cent.

The irregularity with which different lengths of stock are mixed together may not be sufficient to cause damage to the goods, nevertheless the slightest variation will necessitate the use of more of the longer and more expensive material in order to get a mixture that will card, spin and weave well.

Great care should be used to layer the different kinds of stock evenly in the pile preparatory to picking. Where large quantities of one class of mixed goods are to be made and the unpicked material is composed of many lots of different qualities, it is an excellent plan to mix such small lots by layers in large piles, from which the material is chopped off vertically and weighed for the picker batches.

The size of such piles is limited only by the floor space available and the quantity of material on hand or required for goods ordered. By this

method an odd lot of but ten lbs. may be mixed evenly through thousands of pieces of goods.

Not only should the greatest care be used in handling the stock by hand, bnt the best machinery and appliances should be provided for preparing and mixing, and carefully arranged to ensure rapid and efficient work. No general specifications for preparatory machinery can be given that would be suitable for all mills. The outfit must be adapted to suit existing conditions.

A MODEL PICKING ROOM.
To be described in a succeeding article.

I will, however, in the article describe the picking room of a mill in which I once worked as carder, and which to my mind possesses so many excellent features as to make it a model for woolen mills on any class of goods.

The accompanying illustration gives a general view of this room, showing four batches layered down and ready to be run through the pickers.

PETER REISSWOLF.

(To be continued.)

—All animals know what is good for them, except man.—Pliny.

The Causes of Nibs in Carding Worsted for Yarn.

Certain kinds of wool are naturally nibby, but the cause of nibs are to be found chiefly in the methods of carding. I do not agree with certain writers who ascribe the presence of nibs in the carded wool to an excessive moisture of water on the stock. Manufacturers of hat felts and other articles where the stock is carded dry are not able to card the stock without nibs, while many manufacturers who work noils, in which there is from 5 to 6 per cent. of oily matter, turn out a carded sliver which is comparatively free from nibs.

The results of the experiments made several years ago at Ardennes in carding wool in water, support this opinion. A constant stream of water was projected on the wool as it entered each of the three cards, and notwithstanding this fact, the stock came out free from nibs. It is principally dry carding which causes nibs,

as the water conduces to the fibres slipping apart. This effect of water is also seen in the gigging process. Here it is impossible to properly gig the goods unless they are thoroughly saturated with water during the process.

For carding wool, a high temperature of the atmosphere is preferable to a low one. There is an increase of nibs in the wool carded in winter, because the moisture in the atmosphere is rarified. It is better to have the room at a temperature of 80° F. than 60°. Below the last figure, there is always difficulty in carding. The oil added to the water serves to retard evaporation of the latter and prevent the cards from rusting. If the atmosphere is low, the oil congeals, and becomes an obstacle to proper carding.

Nibs are also formed when there is too great a disproportion between the fineness of the wool and the size and set of wire in the card clothing. This is the reason why carders are compelled to have their cards equipped with different card clothing to suit the stock that is to be carded.

Other fruitful causes of nibs are cards in bad repair or badly ground. Frequently the end of the wire will have a feather edge, which prevents the wool from passing from one cylinder to another. Improper adjustment of the workers, such as being set off too far or set too close will cause nibs. Fancies set too deeply into the cylinder or removed too far away will also cause the same trouble.

It is very important to have the temperature of the scouring liquor properly regulated. If it becomes too hot, the wool will felt and when it reaches the cards, nibs will be practically unavoidable.

J. RENEL.

—It is reported from Mexico that the cotton mills of that country are to be combined under one management.

Finishing Wool and Mixed Fabrics.

V.

BY N. REISER.

(Translated from the German for the Textile World.)

(Continued from September.)

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There is scarcely a technical term used in any of the arts, as to the exact meaning of which there is more doubt than the word "finishing." One will exclude burling and sewing, another washing and fulling, a third carbonizing, from the operations classed under this term. In this work, however, the word finishing will cover all operations which the goods pass through after being woven. Each one of the processes is more or less essential to impart an attractive and marketable appearance to the goods. Whether the process of dyeing should be included under the term finishing, is, of course, open to question, and we will treat of it only so far as is necessary to properly explain the other processes of finishing.

Nearly every species of wool or half wool goods is in an unfinished state as it comes from the loom; at this stage the fabric contains more or less dirt, oil, glue, size and other foreign matter, and does not possess the right handle, solidity, thickness or stiffness; all of these deficiencies are to be remedied by the finishing process.

There is no other class of textile fabrics which appears under so many different forms as woolen goods, and many of them undergo such a change in the finishing that the uninitiated, or even the finisher himself is unable to recognize the fabric after it has gone through the finishing process. Before taking up the methods of handling the different kinds of goods, we will call attention to the necessary machinery and its operation.

The goods as they come from the loom are called flannels, and bear

this name until washed or fulled. The appearance of the flannel, and the manner in which it is constructed is by no means a matter of indifference to the subsequent appearance of the goods when finished. No matter how skilful the finisher may be, it is impossible for him to get the proper finish on a fabric unless the woven flannel is properly constructed.

The raw material must be suitable for the purpose. For meltons the stock, particularly for the better class of goods, should not be too long, although a very fine quality is not requisite: a mixture of worsted noils or lamb's wool gives good results. For the ordinary woolen finish a medium length wool is suitable. In case two kinds of wool are used in the same fabric, the better quality should be used for that yarn which forms the face of the goods. For a bare finish straight lustrous wools should be used; for the finer grades a worsted top not too long is suitable.

The handling of the raw material in scouring, dyeing, carbonizing and spinning, must be carefully attended to. Strong alkalies as well as high temperature of the liquor and a long duration of the process should be avoided in scouring. Strong chemicals should also be avoided in dyeing, as well as long boiling, excessive friction and rapid cooling.

In carbonizing, care should be taken to avoid excessively strong acid baths and prolonged drying at a high temperature; these make the fibre harsh and brittle. Excessive picking and carding of the stock should be avoided, and the threads should not be spun to a finer size than the stock is suited for.

The twist of the yarn should be suited to the finish desired, neither too loose nor too hard. With a good quality of wool used for fulled goods, a crossing of the fibres should be effected as much as possible. If, however, the goods are to be finished with a bare face, this crossing should be avoided.

The weave employed must also correspond with the finish desired. If the goods are to have a covered face, the weave should not be so sharply defined (except in the case of certain overcoating stuffs), as when the goods are to be finished with a bare face. For goods with a bare face the weave should be clear cut, particularly for ribs, diagonals and block effects.

The "lay-out" of the goods must also be suitable for the finish desired. Under the term "lay-out" is included particulars as to the general texture of the fabric, such as the threads of warp and filling per inch, the width in the loom, size of the yarn, etc. Goods that are to be finished with a bare face should be woven as narrow as possible in the loom, in order to avoid a prolonged fulling and hard felt. If, however, a clear finish is not desired, the flannel must be set wider in the loom to give the necessary felt.

Goods with a clear face must also be woven with more picks per inch, relatively speaking, than is the case with goods that are to be felted. The first-named fabrics undergo slight change in length, whereas fulled fabrics shrink more or less lengthwise, consequently have more filling threads per inch when finished than when they came from the loom. If goods that are to have a bare face are not woven with a sufficient number of picks per inch, it becomes necessary to full the pieces lengthwise, in order to give the necessary strength to the cloth, and this produces a felt, which destroys the clear finish desired. This defect cannot be remedied by gigging, as that operation gives the goods a thin, meagre appearance, besides causing considerable waste of stock. On the other hand, if goods that are to be fulled lengthwise are woven with too many picks per inch, the cloth will come out too heavy and feel hard and boardy.

On account of the numerous imperfections in the flannels as they come from the loom, such as wrong draws, missing threads, irregularities in weav-

ing, etc., it is first necessary to carefully examine and mark the imperfect places. The first examination is given to the goods by the weaver, who enters the particulars of each piece in his weave book, such as date, loom number, weaver, piece number, style, width, length and picks. This first examination must be made by the overseer of weaving, in order that he may know the condition in which the pieces are delivered to the finishing room, and be able to remedy any defects that may be observed.

Of the imperfections found in woven flannels many are caused in the weave room, others in previous processes, but in any event a careful examination of the flannels should be made by the weaver, in order to prevent the recurrence of the trouble.

BURLING.

The first operations, which can be classed as part of the finishing process, are burling and sewing. Burling consists in the removal of knots, slugs, bunches, long threads and similar defects, and closing up the holes and breaks caused by the removal of such bunches. This operation is usually done by hand, but sometimes a machine is used.

If done by hand, the cloth is drawn over a table covered with sheet zinc, and the operator removes the bunches, etc., by means of burling irons and shears. The points of the burling irons should be sharp, and the edges well-rounded, in order that the threads in the goods may not be injured when the bunch is pulled out. With many classes of goods the removal of knots from the face of the goods is not advisable. In fine worsted yarn the knots should be pushed from the face through to the back of the goods, and cut off after the goods are scoured. It frequently happens that the ends of the threads where the knot has been cut, separate during the scouring process, leaving a short space with the thread missing. This is very liable to happen with loosely woven goods.

Bunches caused by wool flyings and similar imperfections should, of course, be removed from both sides of the goods. If the goods are to be fulled, a drawing together of the threads where the bunch has been removed, does not cause any imperfection in the finished fabric, but in tightly woven worsted goods such places are very apt to show an imperfection when finished. If it is necessary to scratch the threads together where a bunch has been removed, this should be done very carefully, and not at haphazard. Many burlers have a habit of moistening the goods before drawing the threads into place; this should not be allowed, as it is very apt to cause an imperfection, particularly in worsted goods.

The burling of many kinds of silk, cotton, half wool and light wool goods is frequently done, in part, by a machine, which removes the greater part of the knots, flyings and dirt. This machine has emery rolls, stiff brushes, knives and metal strips provided with saw teeth. A hand tool is sometimes used for this purpose; two thin metal plates, having saw tooth edges, are mounted on a light frame in such a way that the saw tooth edges are brought within about one-eighth of an inch of each other. The operator draws this tool back and forth over the cloth, and thus removes many of the bunches and slugs.

Machine and hand burling is sometimes carried on simultaneously. The cloth to be burled is placed on a roll above the machine, whence it passes down over two large cylinders, the face being exposed to the operator on one cylinder and the back on the other. A burler stands at each cylinder, and burls the goods as they are carried along by the slowly revolving rolls. Revolving brushes remove the loose stuff from the surface of the goods. Machine work has not been able to displace hand burling, and it is probable that this work on woolen and half woolen goods will to a large

extent continue to be performed by hand.

SEWING OR FINE DRAWING.

It is very important that the imperfections should be plainly marked on the pieces before going to the sewer. This will result in the saving of much time, as the sewers cannot be expected to find the imperfections themselves.

Imperfections in woolen goods may be divided into three classes: 1. General; 2. Warp; 3. Filling. It will be found a very good plan to adopt certain marks to indicate the nature of each defect; in this way the knowledge of them acquired by the examiner will be given to a large extent to the sewer.

Under the first head of general imperfections may be classed the following: Soft twisted threads; imperfections or breaks in the weave; coarse threads; thick knots; fine threads; double threads; hard twisted yarn; snarled yarn; slack and tight threads; displaced yarn; the last named occurs generally in the filling by reason of the yarn catching on the knots and bunches in the warp, causing a displacement of the filling threads.

Under warp imperfections may be classed: threads out; the breaking of several adjacent threads; streaks in the warp arising from various causes; harness skips; wrong draws.

Under filling imperfections may be classed: cut filling, caused by the reed being too sharp, the weave too tight, the warp set too close or the filling yarn being too soft; filling drawn in at the sides; misspicks; wrong yarn in filling; and shuttle smashes.

This operation of sewing is performed either before the pieces are washed, after the first washing or when the goods are sheared. Whenever possible, the fine drawing should be done in the grease. There are fabrics, however, in which it is not possible to sew the threads in before scouring on account of the presence of dirt or grease, which prevents the different colors from being distinguished, or where the yarn has been sized heavily and is too stiff to allow the thread being drawn into the cloth; in such cases the goods must be first scoured.

The advantage of doing this work before scouring is, that the thread which has been sewed in takes during the scouring its proper position in the fabric.

Frequently the mistake is made of sewing unscoured yarn in the pieces which have already been washed. Such threads generally cause a defect in the finished goods. If the goods are piece dyed, the unscoured threads do not take the same color as the rest of the goods, thus causing an imperfection. Yarn for sewing in can easily be scoured by attaching a skein of it to a piece of the goods in the washer; by this means the yarn receives the same treatment as the goods in which it is to be sewed.

It is not necessary to replace missing threads in all fabrics; this depends upon the finish, the weave and the pattern of the goods. It is more necessary to sew in missing threads where the goods are to be sheared closely than where a cover or nap is left on the face. There are, however, certain goods finished with a nap in which threads which have been left out must be replaced; among such fabrics may be mentioned Montagnacs, Boucle effects and similar goods. Where goods are to be finished with a nap, it is generally necessary to replace threads where a number are missing in one place, or where the missing thread is needed to complete the color pattern. In colored stripes, squares and dyed effects each thread must be in its place in order to avoid imperfect goods.

Following are some observations on the method of sewing threads in various classes of goods:—

1. Friezes. Only when several threads are missing; single threads need not be replaced.

2. Cheviots. If the goods are sheared closely, the threads must be

sewed in. If the yarn is very coarse, the knots must be removed, and the threads sewed in the vacant places. This should be done only after washing.

3. Black goods with a long nap. Here single threads in either warp or filling need not be replaced. Coarse yarn, however, must be removed, and as regular yarn can, in such cases, be easily introduced in the vacant places, it is well to do so.

4. Five harness sateen weaves. Where one warp thread is missing, an adjoining thread is taken out. On the other hand a filling thread left out causes the warp threads which are not stitched to float for eight picks; in high grade goods the misspick is sewed in; in the cheaper grades the floating warp thread is simply cut off.

5. Woolen goods dyed in the wool. Is case two threads are missing from goods which are to be finished with a nap, one of them, at least, should be replaced. If the missing threads are required to complete the pattern, both must be sewed in. Backing warp must be sewed in only when two adjoining ones are missing, or when the missing thread causes the backing warp to float so far that streaks or ribs appear on the face when the goods are fulled or washed. The same rule applies to backing filling.

6. Piece dyed woolens with a bare finish. All face threads must be sewed in. Single backing threads need not be replaced unless they cause ribs or streaks to appear on the face.

7. Worsted cloth dyed in the yarn. All missing face threads must be replaced. If the goods have a bare finish, backing threads should be sewed in, providing their omission causes streaks on the face or the missing thread is required to complete the pattern.

8. Piece dyed worsteds. If with a bare finish, all threads must be sewed in. With a cheviot finish, however, it is generally not necessary to do this.

9. Sharply defined diagonals, rib effects, etc. These must have all the threads in place, particularly if the goods are sheared close.

10. Beavers. In fine goods all missing face threads must be sewed in. In cheap goods single face warp threads are not sewed in, and frequently misspicks are not replaced. Misspicks on the back of these goods generally cause a streak on the face.

11. Montagnacs and similar goods. If any of the yarn required to produce the curl effect of these goods is missing, it must be replaced. The sewer must be careful not to sew in too short a piece as it is liable to be pulled out in the subsequent operations of finishing. Some finishers have the ends of the yarn, which has been sewed in, fastened on the back of the goods. Sewing in the threads on the back of these goods is not so necessary, as the back is generally covered with a heavy nap. Single misspicks need not be sewed in; backing warp, only when its omission causes too long a float in the filling.

FIG. 29.

Before the pieces are given to the sewer the overseer should inspect them, and mark carefully with chalk the places that are to be repaired. Care should be taken to use chalk

which can be easily scoured from the goods.

Where the weave has but a few shafts, an imperfection caused by a missing thread can occasionally be corrected by pulling out one or more additional threads; the cloth is then moistened at this place, and the separated threads are drawn together by an instrument shown at Fig. 29. Suppose, for instance, that the goods are woven with a plain weave, one missing thread will cause the two adjoining threads to run together. If one of these threads is now pulled out, the remaining threads will interlace as in a plain weave. This expedient may sometimes be resorted to in the case of three or even four leaf twills. Care should be taken, however, that the threads which are removed are not broken off at the same place.

This method can be availed of only when the goods are well fulled afterwards or when they are finished with a thick nap, and should be resorted to sparingly. Frequently it means "jumping from the frying pan into the fire." If face threads are pulled from double cloth, care must be taken to pull out the corresponding backing threads.

If coarse threads appear in the goods, a perfect thread can be substituted very easily by pulling out the coarse threads for a short distance at a time, and then introducing a new thread in its place, as the vacancy is then easily found. It is a bad practice, although often followed, to fasten the regular thread on the coarse one and draw the former into the cloth while the latter is being drawn out. During the operation the twist is apt to run from the coarse into the regular thread.

Fig. 30 represents a four leaf twill, in the middle of which a thread is missing. A threaded needle is about to be introduced into the vacant place.

All weaves are not as easily repaired as the four leaf twill. Long practice and experience is necessary for the proper performance of this important work. The sewers should have a knowledge of weaves and weaving. With unskilful sewing the goods often look worse after being repaired than if no attempt had been made to remedy the defect.

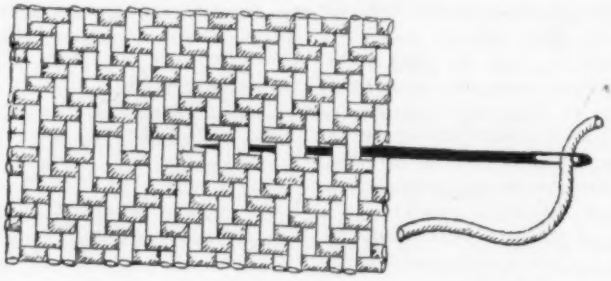

FIG. 30.

(To be continued).

"The Largest Loom in the World."

A Bury, Eng., firm lately built a loom for weaving paper makers' dry felts, which has a total width of 37 feet, a reed space of 29 feet, and weighs 20 tons.

It was claimed by English authorities that this was the largest loom in the world. We referred to this claim and received word from an American mill that they were operating an American loom with a reed space several feet wider than that of the Bury loom. C. H. Hutchins, president of the Crompton and Knowles loom works inform us that his company have for several years been turning out looms with a reed space of 31 feet, 8 inches.

and are now building one still wider than that.

A Chemnitz, correspondent comes forward with the statement that a German firm exhibited at the Leipzig Exhibition in 1897 a power loom for weaving artists' canvas, which had a total width of 36 feet with a reed space (which is the proper standard of size for looms), of 32 feet, 10 inches.

The Englishman retorts that his loom may not be able to weave as wide goods, but it's a deal heavier, "don't you know?" In fact, twice as heavy as the German loom.

Memoirs of a Veteran Wool Carder.

V.

I left the Blackstone Woolen Co. to engage with the Sayles & Jenks Mfg. Co., Warren, Mass. Everything was in good shape, and I was pleased to find that the cards had not been altered to stick me, the same as they have in many other rooms which I have taken charge of.

It is a very bad practice for carders to alter the cards when they know a new man is coming. I have found the strippers set off from the workers over one quarter of an inch, tumblers set into the cylinder, feed rolls loosened, fancies set hard on one side and loose on the other, stripper belts loose, fancy pulleys loose, ring doffers set up to cylinder, feed gears altered, and even the scales on the Bramwell feed disarranged.

I have found feed rolls set into the licker-in and off from the licker-in, and in some places the roping was being drawn from the ring doffers too fast and in other places too slow. In several places I have found the roping too tight on the spools. In one of these mills two boys were on each side of the condenser, trying to keep the ends up, and could not do it, simply because the roving was being wound too tight.

If the new man is competent, the only effect of such tricks as these is to give him a little trouble and cause a great deal of damage to the mill. On the contrary, if he is not competent, he will be unable to manage the room, no matter how good the condition of the cards is when he takes charge of them.

It is also a poor plan to run down the last carder by saying that he let the cards get into poor condition. Perhaps he was just as good a workman as the man who talks against him. I say to the carders, mind your own business and try to do better work with what you have to do with. If you can show better work, the superintendent, boss spinner and the spinners themselves will soon know it, and there will be no trouble in getting all the card clothing and supplies that you require. Don't try to hurt your brother carders. Live and let live.

I once went to work in a card room where some of the rings were in very bad shape. All the wire was broken out across the rings, and there were no new rings or old ones in the mill. The way I got out of this scrape was to take off the bad rings and some of the good ones. From the good ones I took out a tooth here and there, and replaced them in the bad places of the poor rings. It was a tedious job but it worked like a charm, and those rings ran a long time.

I would say to carders right here, do not get quarreling with the boss spinner. He knows as well as you do when the roping is not right. I never worked with a fussy boss spinner in my life. Whenever he sees anything wrong, I am very glad to have him let me know it. I worked with a boss spinner once who said he could spin as much work as I could get through the cards, but he could not do it.

During my travels in different mills I have come across men in charge of mills who were competent and in every way well fitted for their positions, but, unfortunately, I cannot say as much of all the managers under whom I have worked. Influence

and favoritism sometimes place men in charge of mills who know very little about the business.

I was grinding a first breaker cylinder one day, and the super came along:

"Grinding, Sam?"

"Yes, just touching her up a little."

"Well now, Sam, why can't you turn that cylinder around the same as we do the rag picker? If you did that, you could get along without grinding for a long time."

I had to turn my head and smile.

"Oh, that would never do. The card is not a rag picker."

He insisted upon my giving him an explanation, and I did so as gracefully as I could, not wishing to humiliate him or hurt his feelings. That man is now holding a first-class situation as superintendent of a woolen mill.

Another instance that came to my knowledge was that of a cotton superintendent placed in charge of a woolen mill. The machinery in the finishing room evidently puzzled him, for one day as he was passing through the room in company with the finisher, he looked over to a fulling mill that had been taken apart in order to repair the rollers, and nudging the finisher, said, "What is that machine, anyway?"

Another case I heard of was of a wool buyer for a large New England mill. He knew as much about wool as I do about silk, and one day, while in company with some dealers in the wool market, who were discussing the grades and prices of pulled wools of which they had a number of samples before them, this particular buyer called the gentleman who told me of the incident to one side, and said: "Say, does pulled wool grow on a bush or on a sheep?"

From what I have observed in the woolen business the mill generally pays well for the education of its employees.

SAM DRIVER.

—The indiscrete man is an open book that any one can read.—Sully-Prudhomme.

The Formation of Mildew in Woolen Goods.

The formation of mildew in woolen, as in cotton goods, is due to the development of fungoid growths in the presence of air and moisture at a certain temperature. The most favorable time for the appearance of these fungi is in the summer, and especially in the month of August they occur very frequently. Certain dyes, like vat blue, are particularly liable to this growth, probably on account of the alkaline re-action of the dye liquors. The danger can only be avoided by not allowing the goods to lie in a heap for any considerable length of time. One of the primary causes of mildew can frequently be observed in the process of weaving moist cloth. Two different kinds of fungi may appear at this stage, according to whether the fabrics remain cold or get hot. In the first place the fibre is not attacked or disintegrated, and also the fungoid growth often extends over a considerable area. Dark shades are hardly ever affected. The mildew can easily be brushed off.

Much more serious is the second kind, which appears in the form of smaller or larger patches, generally disintegrating the fibre. Mildew stains of this kind show after the milling as bare patches, and the fibre appears quite rotten. The same stains are often caused through the cloth, after the milling process, being left to lie unwashed. Undoubtedly the highly alkaline reaction of the cloth at this stage is very favorable to the growth of the fungus.

There occur, however, other stains in woolen cloth, which in their appearance are very much like mildew stains, but are due to quite different causes, and only a microscopical examination can reveal the true nature of the stains. Under the microscope the fibre of mildewed wool is found to have lost its characteristic scales, almost entirely, and to be split or dissolved into numerous cells so that the

ends of the fibres possess the appearance of a brush. Such mildew stains are in dyeing quite indifferent to coloring matters, so that according to the degree to which the fibre has been affected the stains appear after dyeing of a higher color than the rest of the cloth, or they may remain altogether undyed.

The behavior of mildew stains toward various dyes was found as follows:

Scarlet, dyed in one bath with cochineal, tin crystals and oxalic acid —White spots of varying sizes.

Billiard-cloth green, dyed with acid green, sulphuric acid and Glauber's salt—White spots, fibre very rotten.

Moss-green, dyed with indigo carmine, fustic and alum in one bath—Light greenish-yellow stains, the pile of which is entirely destroyed.

Vat-blue, topped with logwood—Large and small stains, dyed an uneven light blue.

Vat-blue, medium shade—Irregular white spots.

Dove-gray, dyed with alizarine blue S W—Pale blue spots.

Dark brown, dyed in one bath with fustic and camwood, with copper and iron sulphate—Large and small light brown stains.

Logwood black, with ferrous sulphate—Light bluish stains.

The mildew stains on the logwood black are very similar to the stains caused by soap remaining in the cloth in the washing. In all cases the microscopical examination of the above samples showed the scaleless and split fibres.—Farber-Zeitung.

The Shrinkage of Woolens in Dyeing and Finishing.

Nearly all woolens, when submitted to the different operations of finishing and dyeing, show in a greater or less degree changes in length and breadth, caused generally by the forward motion of the pieces at a certain tension when in the dyeing and finishing machines. The goods are inclined to increase in length and decrease in breadth at the same time.

Besides avoiding as much as he can all unnecessary tension in the machines used for washing, gigging, dyeing, shearing, etc., the finisher must make use of preventive measures in fulling, principally to obtain the required ready breadth and weight in such a manner that the stuffs become broader and shorter. It is difficult at times to determine the proportions of this shrinkage. Even though the correct measure may be found by experiment for certain classes of goods, small and often unforeseen changes in the same line of stuffs frequently occur which overthrow all previous calculations. For instance, a change of wool often calls for a different treatment of the cloth in washing and dyeing. In the same manner a small difference in the thickness of the yarn produces similar results in fulling and finishing.

The behavior of the cloth in the fulling operation may serve to a certain extent as a guide. The quicker, for instance, a piece fulls in breadth, the more will it be inclined to shrink in the subsequent operations. This will be the case especially when with light-weight cloths, such as cheviots, serges, meltons, etc., the fulling capacity is not entirely exhausted. The inclination for shrinking, therefore, is still proportionately strong. The cases are not at all rare where easily fulling stuffs will shrink several inches in breadth after having been withdrawn from the mill, while lying or hanging upon the horse before being washed.

The texture of the weave is also a factor to some extent. Loosely woven stuffs, especially double weaves, have more inclination to shrink in breadth and draw out in length than compact weaves with a greater number of thread crossings. The color of the stuff may also exert an influence in some cases. White and vat-blue goods are always more inclined to shrink in breadth and stretch in length than kettle-dyed pieces—

brown, green, black,—as the shrinking capacity and elasticity of these is more or less impaired by the boiling and mordanting with chemicals.

The endeavor to preserve the full width of the goods, even in cases when they are light and loosely woven, must not be pushed too far, for the following reason: The attentive observer has doubtless noticed that light and loosely woven stuff does not shrink so rapidly at the beginning of the milling as when the felting and shrinking process has progressed to a certain point. When this point has been reached, the goods begin to shrink rapidly. If the cloth is now taken from the mill, the shrinking in the subsequent operations will not take place to that degree as it will when the proper period has been exceeded.

Suppose we take a piece of cheviot or melton for piece blue. In order to reduce it to 53 inches ready breadth, we should perhaps be obliged to take it from the mill at from 54 to 55 inches. Up to 55 inches the felting process progresses slowly. After that, however, it is accelerated, and after a short time (from 10 to 15 minutes) we have obtained the breadth of 54 inches. If we exceed this even by ½ inch—in other words, continue to full to 53½ inches—the piece will shrink very much in the subsequent washing. After washing, we may find it reduced to 51 inches. The piece is too narrow, and will become still narrower when dyed in the vat or kettle, and in the subsequent rinsing.

We take the next piece out of the mill, let us say, at from 55 to 56 inches. While with the first piece we experienced a loss of from 2½ to 3 inches after washing, we may now have very probably a shrinkage of ¾ inch only, because it was removed before the period of more rapid fulling had arrived. We find that the piece shrinks less in dyeing and rinsing; consequently, it remains too broad. For this reason, therefore, the fuller must be very careful and observe the time when the fulling process begins to accelerate. To stop fulling with ¾ inch difference, either before or after this time, frequently makes a great difference afterwards in the ready breadth.

Goods of close warp and strong fulling tendency suffer but little change in length and breadth afterwards in finishing. It may also happen that goods which were shrunk in breadth with difficulty, become broader again subsequently in finishing. These same remarks also apply to goods shrinking with difficulty in length.

The treatment in washing, finishing, and dyeing, finally, is another factor requiring consideration when establishing the dimensions of length and breadth. It is evident that a light or loose cloth which is to be submitted to a more or less severe gigging must be left broader in fulling than one which is not required to undergo this treatment. In the same manner piece goods intended to be dyed in the vat or kettle and treated energetically in the washing machine for the purpose of rinsing, must remain broader than wool-dyed goods.

Heavy, wool-dyed cloths for nap finishing, such as sateens, doeskins, eiderdowns, etc., which are steam-lustred afterwards, need not issue from the mill any broader than is required—in fact, it is better to have them a little narrower than the prescribed ready breadth, so that they can be tentered well in drying to make them smooth.

(To be continued).

—They whose minds are always occupied with their health are like the misers who accumulate wealth and never enjoy it.—Sterne.

—Discipline is the servitude to which all civilization must yield; those who cannot impose it on others must submit to it.—Anon.

COTTON DEPARTMENT.

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Gauze Effects in Cotton Fabrics.

BY G. WASHINGTON.

The round compact appearance of cotton yarns renders it very suitable for showing the effect of fancy weaves. Its strength and smoothness enable it to stand the strain and friction incident to the production of gauze effects by the use of doup heddles, alone or in combination with plain or fancy weaves.

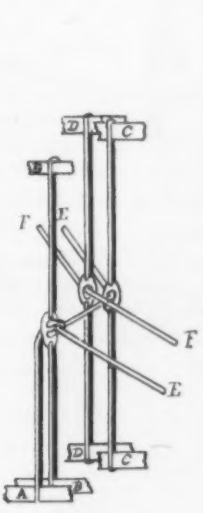


FIG. .

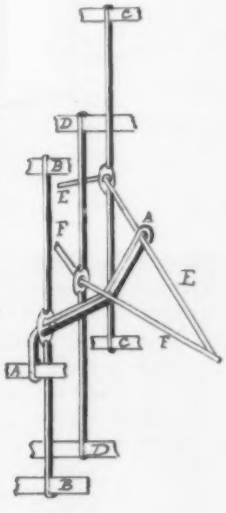


FIG. 2.

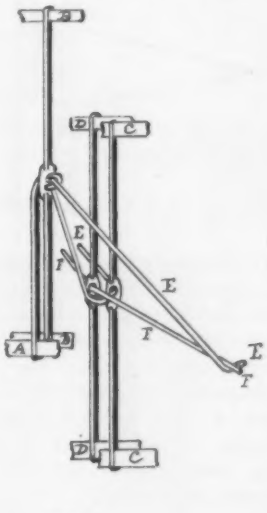


FIG 3.

Doup heddles are extra heddles, placed in front of the ordinary shaft or harness, and used to pull some of the threads out of their proper position, and twist them half way round adjoining threads, so that they may be crossed in the woven fabric from one side of the stationary threads to the other.

The doup heddles consist of an ordinary heddle, called the standard, and a half heddle containing a number of doups or slips passing through the eyes or mails of the standards, and round the whip threads whose motion they are required to control.

"Bottom" doups have the half heddles on the low shaft, and the whip thread is first passed through one of the mails of an ordinary shaft, then crossed under one or more of the stationary threads and passed through the loop of the slip; the stationary threads having the ordinary heddle on one side, and the doup heddle and slip on the other.

When these half heddles are placed above the shafts they are called "top" doups, and the douping threads cross over the stationary ones, and are pulled down by the doup heddles.

In Figs. 1 to 8, A is the doup heddle or slip. B is the standard. This supports and controls the action of the

slips, but does not have any warp threads drawn through its heddles. C is the ordinary heddle shaft, through which the douping thread is first drawn.

D is the ordinary heddle shaft which controls the positions of the stationary thread, so called to distinguish it from the whip or douping thread that twists round it; only one is shown, but two or more are often employed, and may be either up or down as necessary to form the required structure.

E is the whip or doup thread; this is first drawn through C, then passes over or under the stationary threads and through the loop of the slip. F is

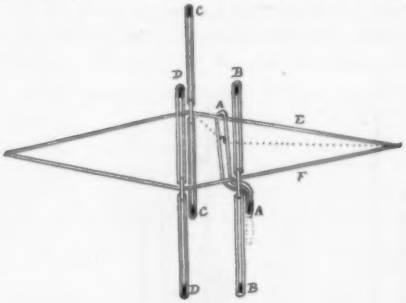


FIG. 4.

the stationary thread. Each group of stationary threads is drawn through the heddles in such a manner that the cords of C are on one side, and those of A and B on the other; however many stationary threads there are in one group, they must always be drawn through the same opening of the reed as the whip thread that twists round them.

Bottom doups are most widely known and Figs. 1 to 3 give a front view of the three possible positions of the whip thread. Fig. 1 shows the position of the shafts when the shed is closed, and the manner of drawing the whip thread through the heddles and doup; the douping thread and shafts are down, and to make a plain shed shaft D, lift the stationary thread, F. Shafts A, B and C remain down whenever the douping thread is to be covered by the weft.

Fig. 4 is a side view of the open shed shown in Fig. 2, with douping thread E, raised to the right side of F; both slip A and shaft C are raised, standard, B, remaining down. The thread E pulls the loop of A through the mail of standard, B, and under thread F, raising it level with the top shed, where it has no effect upon the position of thread E.

Fig. 5 is a side view of the crossed shed shown in Fig. 3, with douping thread E, crossing under the stationary thread F, both in front of the heddles and also between shafts B and C; this is accomplished by allowing shaft C to remain down, and lifting shaft B and slip A. As the slip

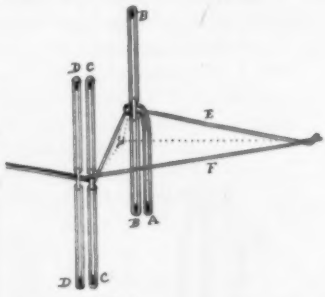


FIG. 5.

and shaft are both lifted the same distance, the thread E is held close to the mail of shaft B, by the slip A, and therefore is drawn round thread F, and lifted by shaft B on the opposite side of it.

When a pick is inserted into the crossed shed, the front crossing is fastened into the fabric, and next time shaft C is lifted to form the open shed, the back crossing is transferred to the front of shaft B, and thus the thread crosses back again to its original position.

One of the difficulties in this kind of weaving is that a considerably greater length of yarn is required to form the crossed shed than the open one, so that the douping threads have to be passed over slackeners, which will liberate a length of warp to form the crossed shed, and take it back or

tighten it when the open shed is formed.

Unless the motion of this slackener is so adjusted as to take up the yarn and make it quite tight when the tightly strained as the open shed; because, if the warp is held too tight, it will draw the slips through the mails of B, and raise shaft A, instead of being lifted by the slips, and a poor,

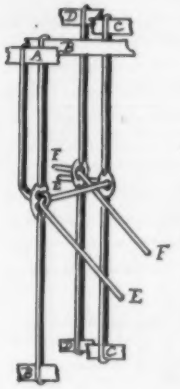


FIG. 6.

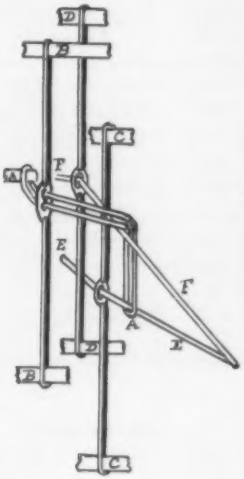


FIG. 7.

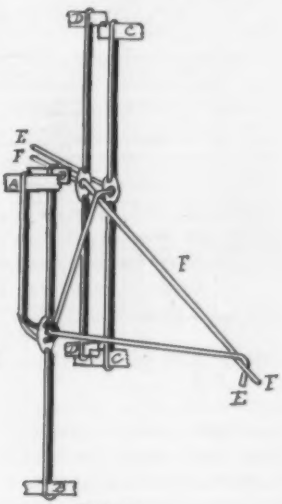


FIG. 8.

open shed is formed, the thread E will not be able to pull the slip, A, level with the top shed, therefore thread E will hang down and obstruct the passage of the shuttle through the warp, as shown by the dotted lines in Fig. 4.

badly opened shed will be the result, as indicated by the dotted lines in Fig. 5.

The action of top doups is exactly opposite to that of bottom doups, and the former possesses several advantages for certain classes of work. As the slips are above the warp, the weaver can both see and get at them

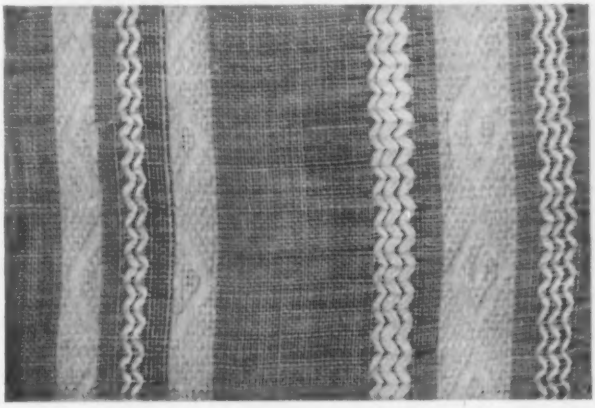


FIG. 9.

On the other hand, while requiring a greater length of warp, the crossed shed also opens better if it is not so

easier. Certain classes of work, such as those with thick douping threads zig-zaging on the face of the fabric, require to be woven wrong way up with bottom doups, but can be woven face up with top ones.

Fig. 6 shows how the doup threads

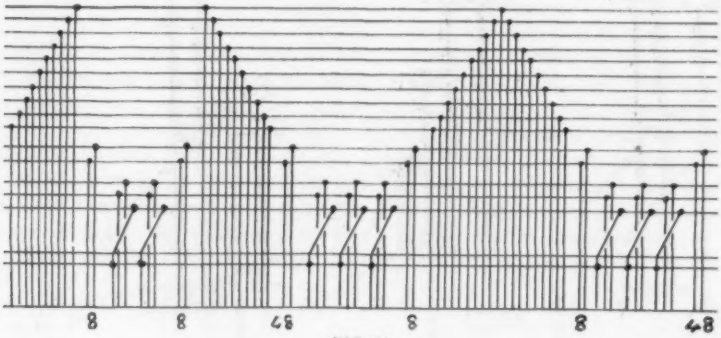


FIG. 11.

pass through heald C, over stationary threads and through the slip A; also that shafts, A, B and C, all require lifting when the douping thread is to form part of the top shed.

Fig. 7 is the open shed with the douping thread pulled down on the right hand of thread F; shaft B is still up, but shaft C and slip A are

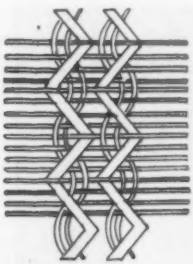


FIG. 10.

down, the slip passing over thread F, and drawn down by thread E, level with the low shed.

The crossed shed is shown in Fig. 8; shaft C is up, while shaft B and slip A are down, crossing the doup thread over the stationary one, and pulling it down on the left side.

While the healds which control the action of the whip thread are only capable of three movements, the position of the whip thread in relation to the stationary one, is also influenced by the position of the healds for the picks immediately before and after it.

In top doups only one movement of the healds is possible to raise the thread, yet it will be at the right of the stationary thread, if it is stitched down on the right side both before and after, or on the left if it is down twice on that side; while if it has been down on one side, and is raised

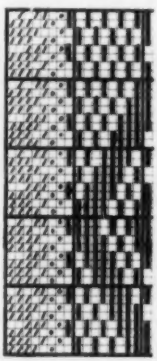


FIG 12.

over the weft before being pulled down on the other, it will cross over both the pick and stationary thread.

When it is pulled down on opposite sides for succeeding picks, then the crossing of the warp comes between the two picks and keeps them apart.

The following drafts and plans are made for top doups with marks to indicate warp up, or that the crossings of the doup threads in the drafting plans correspond with the crossing of the whip threads on the face of the fabric. They can, however, be adopted for bottom doups by calling the blank squares in the pegging plan warp up, and drawing the whip threads under instead of over the stationary ones. The fabric would then require weaving face down. The muslin illustrated by Fig. 9 contains three different kinds of weave effect, plain ground, figured stripe, and gauze weave.

WARPS.

10 threes of 40s cotton in 5 reeds.
8 ends 70s cotton in 4 reeds.
Twice. { 2 ends 70s cotton / 1 end 3-24s cotton } equal to 4 reeds.
8 ends 70s cotton in 4 reeds.
10 threes of 40s cotton in 5 reeds.
48 ends 70s cotton 24 reeds.
Three times. { 2 ends 70s cotton / 1 end 3-24s cotton } equal to 6 reeds.
8 ends 70s cotton in 4 reeds.
19 threes of 40s cotton 10 reeds.
8 ends 70s cotton 4 reeds.
Three times. { 2 ends 70s cotton / 1 end 3 24s cotton } equal to 6 reeds.
48 ends 70s cotton in 24 reeds.
82 reeds per inch.

WEFT.

80s cottons.
64 picks per inch.

The plain stripe is open in texture; the figured stripes are closely woven, each thread in the draft on the back 10 shafts representing three threads which work together as one; the yarn is thicker, so that the figured stripe contains 5 times as much warp as the plain ground.

Fig. 10 illustrates the structure of the gauze effect. The whip thread is stitched down every 4th pick, by the crossed and open shed alternately; both stationary threads come over this pick so as to bind the doup thread as firmly as possible. The two stationary threads weave plain with the weft for the remaining three picks. Each group occupies the space of two reeds, by drawing them into one reed and leaving the next empty.

Fig. 11 is the draft and Fig. 12 the pegging plan; only two threads of plain are shown in the draft, the figures under them indicating the actual number of plain threads in the pattern.

The left hand thread in Fig. 12 is for the doup slips, which are the first or bottom shafts in the draft.

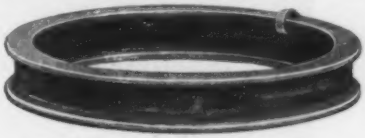
This pattern shows how important a part contrast and alternation form in the construction of an ornamental fabric. Open ground contrasts with close texture in the stripes; two figured stripes separated by gauze, and two gauze stripes separated by a figure, alternate with each other; the straight edges of the figured stripe contrast with the bent whip threads.

New patterns are often produced by combining the same weaves in different order and proportions.

(To be continued.)

The Ashton Spinning Ring Burnisher.

Manufacturers who have contended with the imperfect and unsatisfactory methods of cleaning and polishing spinning rings will welcome the device which S. A. Felton & Son Co., Manchester, N. H., U. S. A., are now putting on the market.



A RING BEFORE CLEANING.

The old-fashioned method usually adopted for cleaning rings, that of soaking them in a potash bath, is far from satisfactory. It leaves a deposit of crystals on the metal, which hot

THE RING AFTER CLEANING.

water will not remove, and by its corrosive action, destroys the burnish of the ring, which is very important for the free movement of the traveler, and consequently, for the best results in spinning and twisting. More or less of the oil deposited on the ring is

absorbed into the pores of the metal and serves a very useful purpose in reducing the friction on the travelers. The potash bath removes this oil, leaving the rings dry and increasing the friction.

The grease, gum and dirt which collects on the rings should, however, be frequently removed, as its presence causes the rings to wear and become wavy and "chattered." The Ashton burnisher removes the gum, oil, dirt, rust, etc., from the rings by mechanical means, and burnishes the metal at the same time. This device has been tested thoroughly, and pronounced to be far superior to any method heretofore used and highly satisfactory. It is very simple and easily operated. Three fibre discs are set into suitable grooves, cut in the circumference of an ordinary bobbin, as shown in the accompanying illustration (Fig. 1). To clean the rings of a frame, a whole set of bobbins equipped with these burnishers is placed on the spindles as for the ordinary operation of spinning. The frame is then started. The discs press against the ring and traveler, and, while rapidly revolving with the bobbin, thoroughly remove all impurities and give the surface of the metal a high polish.

Fig. 2 is a view taken in Granite Mill, No. 6, Fall River, Mass., U. S. A., by courtesy of Mr. Brookshaw, superintendent of spinning, of a frame ready for operation. As the ring rail rises the discs are pressed on the inside of the lower flange of the ring, and as the rail falls the traveler is pressed upward and the inside of the upper flange is cleaned and burnished. Both the upper and lower surfaces of the ring are in like manner alternately polished. The lower part of the ring rail, below the rings, where much dirt and flyings accumulate, is cleaned at the same time. A 5-minute run is

FIG. 2.
THE ASHTON SPINNING RING BURNISHER READY FOR USE.

sufficient, and mill men will easily recognize how quickly the cleaning bobbin can be put on or taken from the machine.

This device was invented by Henry B. Ashton, of Medford, Mass., U. S. A., and is protected by patents. It is being rapidly adopted by progressive mill men, as it saves labor, waste and wear of the rings and travelers, resulting in the increased production of a better and more uniform yarn at a lower cost.

It is now manufactured and sold by S. A. Felton & Son Co., Manchester, N. H., U. S. A., the well-known manufacturers of mill brushes, who will be pleased to furnish samples and further particulars to interested parties.

Russian Cotton Mills.

A report by the Russian ministry of Finance states that 577,792,000 lbs. of cotton was consumed in Russian mills in 1899, of which 31 per cent. was domestic (Russian), and 69 per cent. imported material.

There are in Russia 6,000,000 spindles, 146,000 looms, 109 spinning mills and 118 weaving works, producing 505,568,000 pounds of yarn, valued at $127,720,000, and 397,232,000 pounds of coarse stuff, worth $124,630,000. These mills furnish employment for 170,000 workmen and 150,000 were engaged in the weaving works. The amount of capital invested is $137,505,000.

The average number of spindles in each factory is 56,000, and about 102 pounds per spindle are used. The Russian working-day is a long one. Taking the number of working-days in the year as 285, the average number of working hours of one spindle was, in 1899, 4,503 per year, or 15.8 per day.

The average number of yarn manufactured in Russia equals 27; Nos. 30 and 34 of warp and 34 to 38 of woof necessary for the fabrication of coarse calico are in greatest demand. Although the manufacture of the higher numbers of yarn has made considerable progress in recent years, greater development is retarded by the high price of the weaving machines, which are almost exclusively imported.

There is a gradual annual increase in the number of looms, and while

FIG. 1.

the law of 1897 decreased the number of hours each loom should be run, their productive capacity increases.

The development of the Russian weaving and dyeing production is sufficient to satisfy not only the national demand, but also that of the East. The Asiatic import of Russian cotton tissues increases yearly.

—An electric process for making cloth waterproof has been brought out in France. The goods are saturated in a bath of metallic salts and then subjected to the action of an electric current.

KNITTING DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

The Knit Goods Situation.

The past few weeks have developed no pronounced activity in any branch of the knit goods trade, but a quiet, steady business on spring lines of hosiery and underwear has been in progress and at the present time the results are far more satisfactory than manufacturers and selling agents had looked forward to at the opening of the season. No plunging has been done, but, on the contrary, buyers have been more than usually cautious and conservative in buying, but as noted above, the aggregate results have been decidedly satisfactory.

Stocks of light weight underwear in the hands of the retailer and the jobber are in exceptionally good shape, and a good spring business is looked forward to in every section of the country. The keenest competition has been on the cheaper grades of men's balbriggan underwear and some price cutting was resorted to as the season advanced, but at no time was there any tendency towards such demoralization as existed in the trade a few months ago when men's heavy weight fleeces were being slaughtered. In the line of men's underwear for spring several lines of mercerized goods have been very free sellers, both in plain and fancy styles, and a strong tendency in this direction is plainly evident. Business on ladies' ribbed goods has been extremely satisfactory and many of the mills have their production entirely sold up for the spring season. Fancies have been much stronger than in past seasons, with a decided tendency towards higher priced goods. Elaborate lace trimming on the better grades of ladies' vests will undoubtedly come in for a strong share of popularity with the finer trade next spring, which may be accounted for by the fact that the thin filmy open work goods which have been so much in vogue for waists this season will be stronger than ever for next season's wear.

On winter weight goods jobbers have not yet received many duplicates but all that is required is a week or two of good cold weather and stocks will begin to move. As was noted earlier in the season, last year's business was done largely on original orders, with few duplicates, whereas this season original orders were comparatively light and a good business on duplicates may reasonably be expected.

And, now, with this season's business hardly well under way preparations are already in evidence for getting out lines for fall, 1902, in reality, two seasons away. The American Knit Goods Association at its last meeting appointed a committee to formulate a list of prices, terms, etc., for fleeced lined underwear for fall of 1902 delivery. This list will be presented and acted upon at the next meeting of the association at Albany early in October.

And again, the air is full of rumors of another attempt to unite fleeced goods manufacturers, the plans as reported being somewhat different to those which have been attempted in the past. Instead of paying for the mills part in cash and part in stock certificates of the corporation, the promoters propose to pay cash in full for the plants on which they have secured options. It is doubtful if this combination which has been attempted so many times can be successfully consummated, although it is understood that the promoters have strong financial backing and will make every effort to push the deal through.

Business on spring hosiery is also in very satisfactory shape, although prices are considerably lower than last season. The extract and printed patterns of last season have been practically discarded for the open work and lace effects, which will occupy so prominent a place in the lines for spring. Embroidered goods are also considered very favorably and are selling well not only for spring, but for present delivery. This tendency has been so strong that many jobbers who had stocks of fine gauge black cotton half hose have had them embroidered by some eastern concerns,

FIG. 2. FIG. 1.

who, taking advantage of the situation adapted to this purpose their Swiss embroidering machines, which were in such extensive use last season for embroidering flannels, etc. In foreign goods everything will be lace and open work with embroidered combinations. Lace ankles will be particularly strong, and many importers are placing heavy orders on this class of goods. The continued popularity of the short walking skirt and the Oxford shoe are a guarantee that fancy hosiery will be more popular than ever during the coming season, and, as noted above, lace effects will undoubtedly be the strong feature.

In Figure 1 we illustrate a novelty which has been very freely bought. This is a fine 40-gauge lisle hose with solid colored top, light blue, pink, or heliotrope, striped with narrow white and black circular stripes. The boot, which is of solid black, is silk embroidered to the toe with colored combinations to match the top.

Figure 2 also illustrates a novelty which has been appreciated by the finer trade. This is a fine grade of lisle with drop stitch top, with narrow purple circular stripes; the boot is plain black with the exception of dainty embroidery work in the form of stars, to match in color the striping of the top.

A Chat About Ribbed Knitting Machines.

The knitting room presents no more aggravating or discouraging feature than when after repeated efforts on the part of the boss knitter the machines fail to respond to his adjustments. First of all, keep a clear, cool head; be deliberate and don't get mad or worried. The quickest way out of the trouble which is most always due to some oversight of adjustment, is to start in a systematic way beginning at the yarn.

See that all the bobbins are set so that the centre of same comes directly under the eyelets, insuring an even draw from all parts of the bobbin. Then see if the dial draw cams are set so that the dial needles will throw off the stitch nicely. Through some mistake should one of these cams be set to draw the dial needles too far into the dial, there is bound to be an occasional hole appear in the fabric. Follow this by evening the cylinder stitch cams; these must all be even to insure desirable fabric. This can be done by marking the yarn at a given point, say at the first set of eyelets, by rubbing the yarn between the thumb and fore-

finger soiled with oil. Now turn the machine so that these marks reach the next set of eyelets at the same time. If they do not, the cams must be raised or depressed as they require, the yarn marked again and again until they are all even.

A tight or short stitch in the course of a day's run will make considerable mending and seconds.

Probably the greatest cause of cutting both on light and heavy goods, but much more noticeable on light weight, is the setting of the dial cap. The set screws should be loosened and the cap swung in a position so that the cylinder needle draws down in time to lay the yarn upon the latch of the dial needle just back of the rivet. This is an extremely important adjustment. The guides must all be perfectly smooth at all times and set just so that latches close beyond the end of the guides, and laterally so that the hooks of the cylinder needles do not rub and cut them away. Turn the machine slowly and see that all the latches of both cylinder and dial needles are straight and close over the hooks perfectly.

Keep a sharp lookout for loose rivets as they are hard to see and will cause more loss in a day's run in mending than the price of a hundred new needles.

With the take-up set so that there is no unnecessary strain on the goods yet sufficient to keep the stitches from working up on the needles. The average knitter by following the above instructions should be able to keep the percentage of seconds at a very low figure.—[Q. R. KNITTER.

—Reports from the party of cotton growers sent by the German government from this country to Germany's African possessions, state that they are making satisfactory progress with their work and that cotton growing in that country, Togoland, promises to be a success.

The Cost of Hosiery.

In the July issue we published an estimate of cost of half hose in a Southern mill. This estimate has attracted considerable attention in the trade, and one of our correspondents asked us to give him the items of this estimate, both on half hose and ladies' hose. These items are as follows:

For 176 needle ladies' hose;	
2 lbs. 14's yarn at 17 cts.	.34
Dyeing 2 lbs. lisle black at 6¼ cts. & freight	.128
Boxes Paper	.022
Wood and Oil	.012
Supplies	.003
Knitting	.012
Hemming	.015
Turning	.003
Looping	.035
Mending and Inspecting	.02
Finishing	.04
Day labor and fixed charges on a basis of 160 doz. per day	.075
	.705

For the half hose the estimate cost was itemized as follows:

1¼ lbs. Eastern Carded No. 14 yarn at 16½	.026
1¼ lbs. dyeing and Freight, Lisle Black at 6¼c.	.08
Boxes, Paper	.02
Wood and Oil	.013
Supplies	.005
Topping 176 needle work	.025
Knitting or Transferring	.036
Looping	.035
Mending and Inspecting	.02
Finishing	.04
Day Labor or Fixed charges on a basis of 200 Doz. per day	.06
	.54

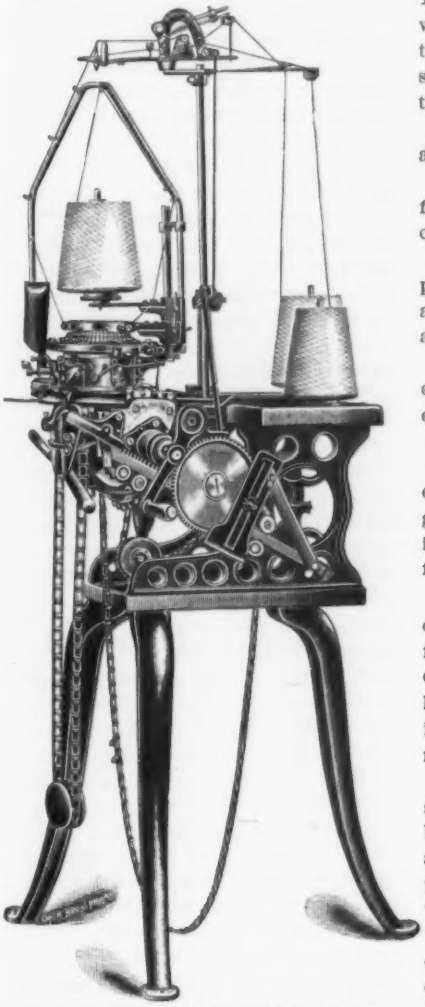
After examining the above estimates he sends us the following letter commenting upon them:

We cannot agree with these prices. Knitting at 1 2/10 cts. is 8/10 of a cent lower than anything we have ever heard quoted except possibly in the South. (The mill is a Southern mill. Editor.) We would understand the finishing, 4c. to include forming, pressing, stamping, brushing, folding, etc., and we certainly do not see how it can be done whereas the 7½ cts. for fixed charges is ridiculously low. On the half hose from 4 to 5 cts. is the lowest we have ever heard quoted for topping 176 needle work, and 5 cts. for knitting the same, and from 4 to 5 cts. for looping. If manufacturers are selling goods based on the cost prices mentioned in this letter, we do not wonder that they are losing money, and that the hosiery business is in a bad condition.

Profit and Loss.

A Two-feed 7-8 Automatic Knitter.

The manufacture of hosiery has passed through a period of rapid evolution, caused by the introduction of improved machinery, which has increased the number of machines run by one operator, lowered the cost of



manufacturing and reduced the number of seconds, floor space and power, as well as the repairs and broken needles.

One of the recent steps in this direction has been made by the Excelsior Knitting Machine Mfg. Co. of Allentown, Pa., by building the Excelsior two feed ⅞ automatic knitter, designed especially for ladies' hose or string work. A test made at their works with 188 needle 3¾" dia. machines, showed that six machines will produce from 28 to 30 doz. in 10 hours.

The speed was 250 rev. per minute. This is equal to a speed of 500 rev. with a single feed, or, in other words, the six machines are equal to 10 or 12 single feed machines as far as production is concerned.

The builders claim the following advantages for this knitter:

1. Difference in cost between six 2-feed and ten or twelve single feed machines.
2. The improvement in quality and production, because the operator has a less number of machines to look after.
3. Less floor space required, which enables the production to be increased two-fifths on the same floor space.
4. Less power required.
5. A reduction in the repairs as compared with the production of goods, one 2-feed machine not requiring any more repairs than a single feed knitter.

One great advantage of this machine is that the operator has from four to six knitters less to look after. On the ⅞th automatic machine the knitter sees each stocking twice during the knitting, and cannot fail to note any defects that may occur.

The accompanying illustration shows the 2-feed machine, which embodies all the features of their ⅞th automatic knitter, and is adapted for the manufacture of ladies' black hose with white feet.

After the toe is finished, the machine stops automatically and the operator inserts the extra feed thread and at the same time throws the extra stitch cam and sinkers into action. After the desired number of courses are knit, the machine automatically fastens or tightens for the ankle, then stops for the heel.

The operator then runs up the half back needles, which allows the extra

stitch cam to drop out of action, and the extra thread is broken off. At the same time the sinkers are thrown out of action by merely pressing a small lever.

The operator then proceeds as on the ordinary ⅞th automatic machine, by splicing in the extra heel thread and starts the machine with the reciprocal movement.

After the heel is made, the extra thread is automatically cut out, and the knitter proceeds with circular work on single feed until the machine stops for the toe. The machine is then prepared for the toe in the same way as on an ordinary ⅞th machine.

This company is about to place on the market a 4 color striping machine for ladies' and half hose. They have built about 150 of these machines during the past year, which have been running very successfully with an average daily production of four dozen half hose per machine, one operator running three knitters.

Knitting Industry in the United States.

A paper read before the meeting of the New England Cotton Manufacturers' Association at Niagara Falls, by Albert Deabill.

I have chosen as a subject one which has not received much attention from the association and which may not be of special interest to the members, but the knitting industry has become such an important branch of cotton manufacturing that its requirements ought to receive the careful consideration of all the manufacturers of yarns intended for use on knitting machines, and if what I say may but serve to awaken still further interest in this subject of knitting, in all its branches, I shall feel that the introduction of the subject, in this imperfect way, has served some good purpose.

I presume there is at the present time no branch of the textile industry with a wider variety of fabrics than the knitting industry, for most every kind of wearing apparel can be produced on knitting machines, and with the rapid progress in mechanical improvements, energy and capital, I have no doubt that our own knitted goods will take the lead in the race for business in the markets of the world.

The spinner and knitter are very closely connected in this business of knitting, and one of the points to which I shall call your attention is the quality of yarns which come into the knitters' hands to be manufactured into knitted fabrics.

The knitting machines of today are so well constructed that if correctly set and properly cared for, there will be few delays caused by mechanism failing to work. Most of the troubles arise from causes which cannot be charged to structural weakness or faults of the machine, such as poor yarns, incompetency of the operator, or inattention in allowing parts of the machine to get undue wear and out of order.

The greatest source of trouble that comes to a knitter is poor yarns, and whether caused in the card-room, spinning-room, combing, or winding, he finds the greatest difficulties that he meets are knitting yarns of poor quality into perfect goods, which is almost an impossibility. Defective yarn from any cause, whether through carding, spinning, combing, or winding, which finds its way into the knitting room, will cause a larger percentage of seconds and waste than anything else.

I have seen yarn worked on knitting machines (made by an Eastern mill) that was almost worthless for anything but waste, being full of fine cuts and soft places, causing it to break back, or more plainly speaking, pulling apart in the soft, thick places by not having sufficient twist to hold it together, as all twist has gone into the finer places, and had it had held together and gotten into the needles, it would have caused holes to be made and probably the breaking of a large number of needles, which would be

worth more than the fabric on the machine as it would be seconds or waste; on the former of which the manufacturer has lost money, and on the latter there is a loss of fully 75 per cent. of the cost of the yarn, which is consigned to the waste house.

Perhaps there is no fault in manufacturing yarns which will cause so much of it to find its way into the waste house as poor cones, as the careless operator in combing does not take pains to piece up the ends in a proper manner, but will lap on to the cone while it is in motion, thus avoiding stopping the cone and thereby increasing his pay a few cents per week. This careless work will not be discovered until the knitter gets it on to his machine; then comes the trouble, not only from loss of production but also an increase of seconds and waste accounts, and last, but not least, claims made by the knitter against the spinner for poor yarns. This being a loss and vexation to both spinner and knitter, I think it would be well if overseers both of spinning and combing, should look carefully after this matter and endeavor to overcome a most serious cause of complaint and expense.

An experiment made recently, under my observation, with No. 16 white carded hosiery yarn, resulted in 96½ per cent. perfect goods, 2 per cent. seconds and 1½ per cent. of waste, with an average breakage of one needle to 4/58 dozen of goods knit, and another lot of yarn, received from same mill, same quality, worked on same machines, with same operator, which through poor cones caused a breakage of one needle to 2/20 dozen knit and only 80 per cent. perfect goods, 12½ per cent. seconds and 7½ per cent. waste, found its way into the waste house, on account of loose ends on cones.

This would allow the work to "run off" the machine and make pieces of knit waste from a few inches to 22 inches in length, the longest piece being too short even for seconds, besides a loss of fully 20 per cent. of production and causing the knitter to lose nearly all patience, and having to make allowances to the operator, which all go to make the profits appear on the wrong side of the ledger when the goods are finished and ready for market.

Now, having pointed out what is a fruitful source of loss and trouble in the material delivered to us to use, I will add a few words on what to me seems the best arrangement of a modern knitting-room.

First, the knitting room should be laid out in such a way that the operator is near to his machines to stop them in case of their getting out of order and failing to make perfect work, as the knitting machinery is constructed with so many delicate parts, which are easily put out of proper action through a coarse place in the yarn, bunches, or through poorly tied knots getting into the needles and breaking them—not only breaking needles but in many cases sinkers, cylinder walls, and other small parts, such as cams, screws, etc., which will put the machine out of commission from one hour to several days, according to the amount of damage done.

There should be as few driving belts as possible and they should be at the extreme end of each section of machines, and in all cases, when possible, machines should be driven from the floor, the shaft being laid between two lines of machinery.

There are 32 machines on each shaft, taking one four-inch driving belt to supply power, thus doing away with many counter shafts and belts in the knitting-room and eliminating, so far as possible, electricity, caused by friction in driving belts, as electricity here causes no end of trouble and should be reduced to a minimum.

Machines should not be crowded together, as it is then impossible for a fixer to make any repairs on a machine without stopping several others.

in order that he may get around the one on which he wishes to make necessary repairs.

There should be alleys wide enough to admit of a cab being taken through them to pick up the day's work, and there should also be boxes provided and placed on the ends of each alley for the operator to put his knitted goods into, and they should be so constructed as to cover the exposed ends of the driving shafts, thus serving two purposes, one as a receptacle for knitted goods, the other as a safeguard to prevent the operator from getting hurt by the revolving shaft.

The winding-room, if on the same floor as the knitting-room, should be partitioned off, so that no flyings from here will find their way into the knitting-room, as this causes the knitting machines to become filled with lint and will not allow them to perform their proper functions.

There should be properly constructed racks, marked for each number of yarn, so that when the yarn is weighed from the winder it can be put into its proper place with the least possible handling, thus making very little waste from this cause.

There should be a steam box provided in close proximity to the winding-room, so that all cops or skein yarns can be steamed before winding, to take out all kink and set the twist before the yarn is wound, as this is very essential in both winding and knitting-rooms.

The rapid growth of the knitting industry in the United States in the past twenty years has been phenomenal. Twenty years ago Europe found a ready market here for all kinds of knitted goods they could produce, but year by year it has been sending less goods to this country, until at the present day they are sending not more then 20 per cent. of what they were twenty years ago.

Events seem to be tending in our favor towards greater gains in the world's markets, and it seems clear that the thorough organization and equipment of this branch of cotton manufacturing, with our manufacturer's skill, energy and capital, will further the purpose of extending our trade in foreign markets, and no doubt ere many years the stars and stripes will float over American supremacy in all the markets of the world.

In conclusion, will say that while we have established some of the finest textile schools in the world in this country, which are furnishing us some of the best experts in manufacturing woven fabrics, there are few, if any, where the art of knitting is taught as it is in England and Germany, for they have had thoroughly organized schools for the past fifty years, while in our country the knitting industry has had but little attention in this direction, and I trust that my imperfect presentation of the subject will serve to awaken interest and that it will be taken up later by an abler pen.

Foreign Trade in Knit Goods.

The need of enlarged markets for knit goods is now keenly felt by our manufacturers, who have so many mills either idle or running on reduced time.

France, Germany and England export large quantities of knit goods, a good part of which comes to this country. It is difficult to secure statistical information as to this trade, and the following statistics of the French foreign trade in this line may therefore be of interest.

In 1899, France imported $799,000 worth of knit goods, and exported knit goods to the value of $4,558,000. The imports and exports were divided as follows:

	Imports.	Exports.
Linen	660 lbs.	2,640 lbs.
Cotton	328,400 lbs.	4,929,560 lbs.
Wool	220,440 lbs.	721,600 lbs.
Silk	32,340 lbs.	11,440 lbs.

The cotton goods which form the bulk of the exports were divided as follows: Gloves, 15,640 lbs.; piece goods, 722,040 lbs.; knit embroideries, 6,820 lbs.; all other, 4,185,060 lbs.

SILK DEPARTMENT.

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Hard or Soft Twist in Silk Goods.

It often happens that two pieces of goods made of the same number of threads per inch, and with yarn of the same size and quality will be very unlike in appearance. This may be due to various causes, and can be illustrated best by citing a particular example. Take the case of a half-silk umbrella cloth, woven with a five-leaf satin weave, two-ply fine cotton filling one pick in the shade; if the twist of this filling is changed, a marked difference in the appearance of the goods at once follows. A change of twist in the filling of umbrella stuff may result in converting a fabric which resists the light into that which the light easily passes through.

Analysis of two pieces of goods showing this difference, indicated that in one fabric the filling had ten turns per inch, while in the other one there were fourteen turns. This was the only difference discovered, and was the sole cause for the difference of light resisting power in the two pieces.

It is an old rule, adopted in the manufacture of half-silk goods, to use a harder twisted filling for satin weaves than for plain weaves. This rule, however, applies only when the goods are to be used for dress trimmings or linings, fabrics which must possess a high lustre, but which need not be thick and bulky.

The number of harnesses used and threads per inch have much influence upon the twist that should be put into the yarn for filling of satin weaves. A much softer filling can be used on a twelve harness satin weave than on one with five harnesses. In the first instance the yarn floats much farther on the face, and consequently there is more opportunity for it to expand. The irregularities in the yarn also come out plainer when the yarn floats for a greater distance. This difficulty with loose satin weaves can be lessened if the selling price of the goods allows the use of a better quality of yarn.

The weave also has an influence upon the number of threads per inch. Thirty picks per centimetre of 2/40 cotton yarn gives very good results on an eight harness satin, whereas ten harness satin requires, at least, thirty-five, and a twelve harness forty picks per centimetre.

To return to the cloth already mentioned; the quality of the cotton as well as the twist in the yarn has an important influence upon the closeness of the fabric. A long staple, Egyptian or Sea Island cotton gives very good results. In this particular much depends also upon whether the goods are finished with a high lustre or not. A soft twisted yarn is to be preferred if this finish is given to the goods. The manner of handling cotton yarn in dyeing and finishing has likewise an influence upon the cover of the goods.

The cotton threads should expand during the coloring in order to produce a cloth that will resist the passage of the light. The superior light resisting power of a fabric is frequently due merely to the materials used in finishing.

We will now consider silk goods. When raw silk comes from the spinner it can be used only for piece-dyed goods, since it is impossible to give raw silk a uniform twist. The solution of this problem would mark an important advance in the art of silk manufacturing, as it would enable

raw silk to be used for many fabrics that now can be made only with organzine or tram. In order that the silk thread may stand the necessary boiling and coloring, before weaving several raw silk threads are twisted together; this twisting begins with the winding off and spooling of the raw silk from the skein, then follows twisting and doubling. The doubling is in the opposite direction from the first twisting, the first being to the right, and the second to the left.

The grenadine silk fabric forms a striking example of the great influence of the twist on the appearance of the fabric; while the ordinary organzine has but about 450 to 650 turns per metre, the silk yarn used for grenadines has 1500 to 1600 turns per metre, and gives the fabric a sparkling appearance which can be likened only to fine bright sands thrown on a dull surface.

When we turn to the particular weaves employed, we find that it is an old rule that the production of a well rounded twill on the right side of the goods requires that the direction of the twill should be opposite to the twist of the filling. We have two conditions to take into consideration; first, the direction of the twist in relation to the twill; second, the amount of twist in the yarn as compared with the slope of the twill in the goods. These conditions have much more influence with satin fabrics than with twills, as the warp in the first-named comes almost entirely on the face. If a satin twill runs to the left it produces a smoother appearance, and the filling seems more open, while a twill to the right stands out stronger, and the filling seems to be twisted harder.

A twill running to the right with right twist filling causes the twill to stand out boldly; on the other hand, the twill to the left gives the better appearance. If it is desired to bring the twill out boldly with a filling twisted to the right, the twill should run to the right.

It cannot, however, be stated that as a rule the direction of the twill should always be contrary to the twist of the filling. It is not sufficient that the direction of the twill should be opposite that of the yarn, but this twist in the yarn must be harder or softer according as the twill is nearer a vertical or horizontal line. In order to bring the twill out plainly, the twist of the filling must be softer according as the twill approaches a horizontal line.

In goods made from all silk there are a series of fabrics which are made with the same weave and differ only in respect to the amount of twist in the yarn. Good examples of these are the three fabrics: gauze, crape, and musselin; all three are made with a taffeta weave, nevertheless each differs greatly in appearance from the others. For gauze a raw silk double twist is used for warp as well as filling; in musselin the warp and filling are made from yarn composed of two raw silk threads without twist, and subsequently twisted harder together. Crape is made from two or three threads doubled before dyeing, and then twisted hard after coloring. —Zeitschrift fur die gesamte Textil-Industrie.

A Yarn Conveyer for the Dye House.

An apparatus for carrying silk yarn from one dye tub to another or to different parts of the dye house has been patented by a resident of Paterson, N. J., and is illustrated at Figs. 1 and 2.

At present this operation of transporting silk yarn performed manually, requires a considerable number of attendants and much time. The material is hung on rods in large quantities and two men are necessary to handle each rod when loaded.

With this device all the rods that may be in use in a vat can be handled by one or two men at one time, either in simply elevating them so that the material will drain or in transporting them from one vat to another.

Figure 1 is a vertical sectional view of a dyeing house provided with this

apparatus. Fig. 2 is also a vertical sectional view, taken at right angles to the view in Fig. 1; along the outside of each of the longer sides of each vat a series of brackets are secured upon each series of which is sustained a rail, provided on its side faces with metal plates to prevent its warping and on its top face with a hard-wood plate having a sloping top, so that any dyeing liquid deposited on it will run off into the vat. The rods upon which the skeins of silk are suspended in the liquid of the vat, are supported on these rails.

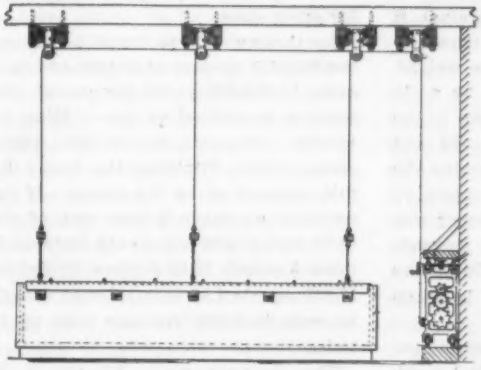

FIG. 1.

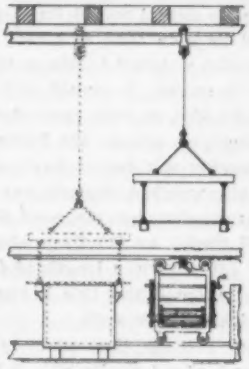

FIG. 2.

Secured to the rafters of the apartment in which the vats are arranged are series of guideways arranged in pairs, each guideway carrying a rail. On these rails rest grooved rollers or travelers, each traveler having a short axle at its upper end, receiving these rollers. There is a pair of these rollers for each traveler, which is thus suspended on the rails between the two guideways and is free to move on them. Each traveler sustains a sheave or pulley, which, being free to move, will follow the carriage.

The frame on which the yarn sticks are suspended is provided with rings, to which are connected chains which run over the rollers and to a suitable hoisting machine, as shown in the illustration.

When it is desired to remove the material from one of the vats, the hooks are connected to the rings, and the crank operated, so as to elevate the material. If then it is desired to transport the material from the said vat to another one, the crank is operated to move the carriage by means of a gear rack.

Numbering Raw Silk.

Regarding the various systems for denoting the sizes of raw silk, I would say that while different methods of greater or less merit have been proposed and adopted from time to time (the last one I believe being arranged at the recent Paris exhibition), yet in this market (New York) at any rate there is little use in considering anything except the old system based on reelings of 476 meters. This is the only one, practically, in which business is transacted.

All the letters and cables from Europe and Asia, all the reports of sales, crops and conditions, all the conditioning houses, every one in fact uses this system in their talk and in their trading. I am aware that here and there some one insists on being quoted to in some other system, but then the salesman or correspondent uses the other system in deference to the particular purchaser and not as a regular practice. The foreign conditioning houses give the sizings in two methods—the N. Y. cond. house in only the one method.

The denier was the weight of a coin, being equal to 24 grains. These grains, by the way, were Paris grains and differed in weight from Troy grains. Reelings of silk aggregating 9600 Paris ells (equal to 11,400 meters) were taken and the number of deniers that this length weighed was the number of the silk.

Now to reel 9600 ells took some time and some silk, and to save on these points they later on took reelings of only 1/24th of the amount, and by also using weight of only 1/24th of the denier (1 grain) the parity was maintained. Thus if 9600 ells weighed 10 deniers (equal to 240 Paris grains), it will be seen that, if 1/24th (equal to 400 ells) weighed 1/24th of the weight, or 10 grains, it would still be a 10 denier size, so they came down to the system of taking 400 Paris ells and whatever number of Paris grains the length weighed, the silk was called by that number, but the word denier was still used. As 400 Paris ells measure 475 3/8 meters, a length of 476 meters was adopted and this is the basis on which we now work.

In getting the exact yards per pound of a 1 denier silk, I find much difficulty in reconciling the various authorities

The meter in the U. S. has, I believe, been legalized as 39.27 inches, and most people accept this.

As, however, these sizings are all based on the French measure, I would prefer to use the exact decimal which in British inches gives 39.3707904 inches per meter. Now instead of turning deniers into grammes, then figuring the meters per kilogram and then reducing these again to yards and pounds, I prefer to do the figuring in grains. One Troy grain equals 1.2186507 Paris grains. As there are 7000 Troy grains in one pound, av., there are, therefore, 8530.5549 Paris grains in one pound, av.

476 M times 39.3707904 in. and divided by 36 equals 520.5693397 1/3 yards.

When 476 M weighs 1 Paris grain it is a 1 denier silk, therefore, the number of yards per 1 pound of a 1 denier silk will be the number of yards in 476 M multiplied by the number of Paris grains in a pound, so 520.-5693397 1/3 yards multiplied by 8530.-5549 grains equals 4.440.745 1/3 yards per pound for 1 denier silk. Nothing finer than about 8 denier silk occurs in practice. By dividing the above constant by the number of deniers, the yards per pound can be at once determined. If the silk on the N. Y. sizing ticket is given as 15.20 den., 4.440.745 1/3 divided by 15.20 gives 292154 1/4 yards per pound. And so for other sizes.

As thrown silk is counted here on the English system of drams and as 1 dram is 256,000 yards per pound, the relation is arrived at by dividing 4.-440.745 1/3 yards by 256,000, which gives 17.347. Dividing the denier by this constant gives the drams. If for instance we made 5 tram out of the 15.20 denier silk we would have 15.20 times 5 equals 76.00 deniers divided by 17.347 equals 4.38 (plus) drams (no allowance is made for any take up in twist).

The constant given by the N. Y. Silk Cond. House is 17.366, and the difference can be explained by the different values given to the various weights and measures as pointed out early in this article. As the difference is only 1/914th, it is a negligible quantity in practice, and I would consider it better to use the constant given by the cond. house on account of the authority it would carry, even if it does contain a small error.

From the foregoing calculations we deduce the following rules:

1. To find the yards per pound of any size of silk expressed in deniers, divide 4.440.745 1/3 yards by the number of deniers.

2. To find the yards per pound of any size of silk expressed in drams, divide 256,000 by the number of drams.

3. To reduce deniers to drams divide the number of deniers by 17.366 (or 17.347).

POWER DEPARTMENT

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

Modern Boiler Problems.

A paper read before the meeting of the New England Cotton Manufacturers' Association at Niagara Falls, by Col. E. D. Meier.

For many years the boiler was considered simply as a part of the engine and no one thought of treating it as a separate entity, to be constructed by specialists. But during the last twenty years, the development of boilers has gone on separately, and to find a machine shop which builds engines also engaged in building boilers, heaters and other accessories, is the exception and not the rule.

Naturally enough, then, there was formerly very little attention paid to details of design and to the inter-relation of various parts in the boiler, which now command the most serious attention of specialists. It is just as necessary to have a clear understanding of the various functions and their dependence on each other in a boiler as in a steam engine.

In fact, I may be pardoned for claiming that, in one sense at least, the boiler is the more important of the two. Engines have been carefully constructed with variable automatic cut-offs, so as to consume in each minute just the quantity of steam needed, thus accommodating themselves to the ever varying demands of the machinery they drive. Very few steam users, however, consider that where there is such an exact system of checks and balances, there must be some source of supply for power which is adequate to meet all these varying demands.

The boiler with its furnace and chimney furnishes this source and it may be news to many of my hearers that in some plants the demand upon it varies sometimes fully fifty per cent. within less than half an hour.

This is especially the case in such plants where live steam is used for other purposes besides driving the engines, as in tobacco factories, breweries, etc. Thus in the end the boiler must make up for all deficiencies and all variations in the entire plant and is therefore deserving of greater consideration than it has received in the past.

Many rules and ratios which were fixed by certain old authorities on steam, whose memory we revere perhaps more than we deem it wise to follow their dicta, may no longer be applied without hesitation. In fact, it would be an injustice to those old authorities who based their conclusions no doubt conscientiously, on facts as observed in their day. With increased demands the facts have changed and the rules must be modified.

Besides, furnaces and boilers must now be separately considered, furnace capacity and efficiency and boiler capacity and efficiency being two different elements of the problem and not to be confounded.

In our old practice, say not more than twenty years back, and in some localities even more recently, we find that 8 pounds of coal burnt per square foot grate area per hour was considered about normal, while 15 pounds represented forced firing. This was in the days when we carried 50 to 60 pounds pressure, and thought we had excellent draft from a stack 50 feet high.

Today we have many plants in which 20 to 25 pounds per square foot grate are required in regular service and 35 to 50 pounds in forcing, while pressures have risen to 150 and even 200 pounds and stacks are built 200 feet and over. I call attention to the stack of the Coates Thread Works at

Newark, N. J., which is 335 feet high, and one recently constructed in Germany, 420 feet high.

Among other things, a good old rule quoted as to fixed relations between grate area and heating surface must be relegated to the limbo of things that have been. It was a very good one when applied to known and very limited conditions, and when one pound of coal meant practically the same thing to a limited manufacturing community, but we have now to consider steam coals varying from the excellence of the Welsh anthracite (really almost a semi-bituminous coal) to the lignites of Texas or Colorado, which have less than one-half its evaporative efficiency. It is perfectly plain that as heating surface is intended to absorb and transmit heat which has been engendered, its efficiency must be the first consideration. The rapidity with which a square foot of heating surface will transfer a certain quantity of heat from the hot gas on one side to the hot water on the other side, depends mainly on three conditions.

First, on the difference between the temperatures of the gases and the water. The greater this difference the more rapid the transfer of heat.

Second, on the circulation of the water on one side and of the gas on the other, for if either stagnate they will soon form a film of practically equal temperature on one side of the metal which is a very slow transmitter of heat; but if the circulation of both be good, new strata of gas and water will be constantly presented to the heating surface, and therefore the transfer of heat will take place under the best conditions.

Third, the transfer depends on the cleanliness of the surface. A sixteenth of an inch of boiler scale will have a large effect in reducing the rapidity of the transfer of the heat, and a covering of ashes or soot on the outside of the tubes will be still more effective in reducing this efficiency.

From the old practice of considering the boiler as part of the engine we have carried over at least one designation which has become an absurdity. I mean the term horse power as applied to a boiler. It is a convenience mainly in serving to cover up the fact that the exact requirements in a steam problem are unknown and that the purchaser wants the contractor to do the guessing.

Engine builders know, and those who build good engines are glad to guarantee, the number of pounds of feed water (or steam) their engines require per horse power hour. And from a first-class re-heating compound engine content with 13 pounds per hour to such auxiliaries as chief engineer White found on the U. S. S. Minneapolis, whose ravenous appetite demanded 225 pounds, is too wide a margin for the shrewdest Yankee guesser.

And such "steam chewers" are also to be found in many fine plants on shore where the treasurer does not suspect them, though he may have put them there himself in mistaken economy of first cost of installation. Their demands must be determined and added to that of the main engines and the total expressed in units of evaporation to define the boiler problem with that precision which characterizes your mill statistics in other matters of like importance.

As the necessity of accurate statement is recognized in all engineering matters the American Society of Mechanical Engineers has recommended two units of measurement which have been adopted by the common consent of steam engineers.

The unit of evaporation (U. E.) is defined as the evaporation of one pound of feed water from 212 degrees Fahrenheit to steam at atmospheric pressure, or more succinctly stated as "the evaporation of one pound of water from and at 212 degrees Fahrenheit."

The horse power is then defined as the evaporation of 30 pounds of feed water from a temperature of 100 de-

grees Fahrenheit to steam at 70 pounds gauge pressure, which is equal to 34.48 units of evaporation or in round numbers 34½ U. E.

This latter was first adopted as a makeshift at the Centennial Exposition in 1876, and its very definition shows its inadequateness and clumsiness as applied to modern conditions. While the U. E. plainly states a perfectly natural and fixed relation, the term H. P. as applied to boilers proclaims its own absurdity.

For with modern feed water heaters interposed between cylinder and condenser and drains from jackets led to the feed pipe, we no longer reckon with hot well temperatures of only 100 degrees or 110 degrees in our feed. When we carry from 160 pounds to 200 pounds of working steam pressure the reference to "70 pounds gauge pressure" loses its practical significance, and there are other times and places for the study of the ancient history of the steam engine.

To me the only rational method seems to abolish the term horse power as applied to boilers altogether and to state how many units of evaporation the boiler is to furnish as its normal work; this, with the one-third margin recommended in the Code for Boiler Tests of the American Society of Mechanical Engineers, would provide a fair and precise basis for purchaser and builder alike. And the principal difference between fair trade and gambling is that in the one the conditions are known and frankly stated, while in the other they are uncertain and hidden.

This plan throws the burden of establishing the facts on your consulting engineer and that is what you pay him for.

As all the important boiler works now employ specialist engineers either permanently or as needed, there no longer exists a necessity for the consulting engineer of a mill to prescribe details of design in a boiler or furnace. His business is primarily to state your requirements in plain words and exact figures, and secondarily to exclude designs or apparatus which in his best judgment, are unsuited to your conditions. There is no more reason for him to indulge in boiler or furnace design than in engine design. A structural engineer states what physical and chemical qualities his material must have and leaves the manufacture to the steel maker. In like manner, when capacity, economy and quality of steam have been specified to the boiler maker, his judgment and experience should have free scope to design the plant to surely fulfill these requirements.

(To be continued.)

The Sterling Steam Exhaust Pipe Head.

It is a well-known fact that the hot and greasy condensation emitted from steam exhaust pipes, if allowed to get on the roofs, or walls of buildings, will quickly rot same.

In order to prevent this, the Ster-

ling Exhaust Head has been designed. It will be noticed, from the accompanying cut, that this head is of a new design, which gives it more capacity than a funnel shaped head. There are no baffle plates in this head to cause back pressure, and the

separation of the moisture from the steam is done with centrifugal force alone, which the makers claim is the only proper method.

It is guaranteed by the manufacturers of this head, that it will cause absolutely no back pressure on the engine, and that it will do the work for which it is intended in a first-class and practical manner.

The Sterling Blower & Pipe Mfg. Co., of Hartford, Conn., manufacture this exhaust head and would be pleased to answer all inquiries regarding same. This company has had offices in New York and Boston for several years, and have been obliged this fall to open up a southern office at Norfolk, Va., in order to take care of the inquiries in that territory.

Coal Dust Apparatus.

Numerous experiments have recently been made in Germany in the burning of coal dust. The apparatus used has usually some form of fan blower to introduce the fuel into the furnace. The Schwarzkopff apparatus has met with favor owing to the facility it affords for utilizing slack or low-grade coal. A German imperial commission appointed to test smoke-consuming appliances made careful trials of this apparatus, and the report generally is highly favorable. As to the conditions peculiar to the process, it is stated that a highly heated fire chamber is necessary for the ignition of coal dust. The higher the temperature the quicker and more perfect will be the combustion. Contact with the boiler walls interferes with ignition, so that in fitting up a boiler for coal dust firing some change in the arrangement has to be made. A fire chamber lined with fireproof material has to be provided, because only such a chamber can be kept constantly at the required high temperature. This is most easily accomplished with flue boilers when flues are lined for a length of from 5 to 8 feet with fireproof material. Metallurgical firings do not offer any difficulty to the arranging of the fire chamber, because the whole furnace possesses the high temperature required. In these cases, the fire chamber can be considerably shorter.—Kuhlow's Weekly.

Mond Gas.

A new process for making gas has been invented by Dr. Mond, of the well-known English firm of Brunner, Mond & Co.

The system is now in operation at their Northwich, Eng., works, where there is one of the longest rows of steam boilers and furnaces to be seen in England, the heating power for which, as well as the lighting of the works, is supplied by the gas plant invented by Dr. Mond.

By this process it is claimed to be possible to produce gas for heating purposes at about 49 cents per 1000 ft., and is consequently the cheapest known fuel at the present day for either heat or power. It is estimated that in various parts of England a fuel equivalent of coal by this process can be obtained at 36½ cents per ton, which ordinarily costs $3.50 to $4.25 per ton. This, of course, means a considerable item in production. The Merchant and Shipper, of London, states that a bill has been passed giving powers to a company to supply the Mond gas over 135 square miles' radius in Staffordshire for heating and power purposes, which looks as if there was something in it.

—Experiments have recently been made to determine the effect of slackening belts when not in use, as at night. Two leather belts of the same size and quality, working side by side under the same conditions, were selected for the trial. One was taken from the pulleys every night, while the other was left on. It was necessary to take up (shorten) the latter belt five times and the former but once. The belt left on the pulleys became worn out while the other belt was still in good condition.

DYEING DEPARTMENT

Dye Recipes for October.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $4.

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Recipe No. 145.

Apple Green on Cotton Yarn.

Oregon Green No. 207 on 100 lbs. of cotton yarn.

Prepare the dye bath with

3 lbs. Oregon Green No. 207.

(W. A. Ross & Bro., 11 William St., New York.)

20 lbs. Common Salt.

Enter goods at 170° F., bring to a boil and dye at a boiling temperature for one hour.

Oregon Green No. 207 produces a brilliant shade of apple green and possesses the characteristic properties of the direct cotton colors.

Recipe No. 146.

Pink on Worsted Yarn.

Rhodamine 6 G on 100 lbs. worsted yarn.

1 lb. Rhodamine 6 G.

(C. Bischoff & Co., 87-89 Park Place, New York.)

15 lbs. Glauber's Salt.

2 lbs. Acetic Acid.

Enter yarn at 160° F., bring to a boil and dye at this temperature for one hour.

Rhodamine 6 G produces a remarkably pure and brilliant shade of pink.

Recipe No. 147.

Black on Cotton Yarn.

Sulphur Black 2 B on 100 lbs. cotton yarn.

Prepare the dye bath as follows:

200 galls. water

raised to the boil in a wooden or iron vat, which should be fitted with closed steam pipes, and a pair of squeezing rollers.

Dissolve therein

10 lbs. Soda Ash.

Then dilute in a tub of about 12 gallons contents

1 gal. Caustic Soda, 76° Tw. with

6 galls. boiling water.

Stir to a paste with

14 lbs. Sulphur Black 2 B.

(Berlin Aniline Works, 72 Front St., New York.)

Then add

40 lbs. Crystallized Sodium Sulphide.

Boil up and when the coloring matter is well dissolved pour the whole into the dye bath and add

100 lbs. Calcined Glauber's Salt.

Boil up once more, turn off steam and skim.

Enter the yarn, lift three times consecutively, and then every fifteen minutes. Dye at a slight boil for one and one-half hours keeping the yarn below the surface of the liquor.

Sulphur Black 2 B requires no after-treatment with metallic salts and is adapted to the dyeing of all kinds of cotton material.

Sulphur Black 2 B gives a more greenish blue, than Sulphur Black T, and possesses excellent fastness to washing, light, acid, and storing.

In second dyeings and in standing bath only 8 per cent. of the dyestuff is necessary to produce a full shade of black.

Recipe No. 148.

Red on Cotton Yarn.

Benzo Fast Scarlet 8 B S on 100 lbs. cotton yarn.

Prepare the dye bath with

4 lbs. Benzo Fast Scarlet 8 B S.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)
20 lbs. Sodium Sulphate.
2 lbs. Soda Ash.

Enter at 180° F., bring to a boil and dye at a boiling temperature for one hour.

Benzo Fast Scarlet 8 B S produces a brilliant shade of red resembling Turkey Red. It can be discharged readily and is valuable in all classes of cotton dyeing.

Recipe No. 149.

Black on Cotton Yarn.

Niagara Black 3 B on 100 lbs. cotton yarn.

Prepare the dye bath with
6 lbs. Niagara Black 3 B.
(Schoellkopf, Hartford & Hanna Co., 100 William St., New York.)
30 lbs. Common Salt.
1 lb. Soda Ash.

Enter yarn at 170° F., bring to a boil and dye at this temperature for one hour, wash and diazotize and develop as follows:

Work the yarn in a cold bath containing
3 lbs. Sodium Nitrite.
12 lbs. Hydrochloric Acid 32° Tw.
for fifteen minutes then rinse and enter immediately into a cold bath containing
1½ lbs. Toluylene Diamine Hydrochloride,
and work for fifteen minutes longer. Wash and dry.

When developed in this way Niagra Black produces a full and bloomy shade of black possessing excellent fastness.

Recipe No. 150.

Blue on Worsted Yarn.

Milling Blue No. 2 on 100 lbs. worsted yarn.

Prepare the dye bath with
3 lbs. Milling Blue No. 2.
(Sykes & Street, 85 Water St., New York.)
15 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter the yarn at 180°, bring to a boil and dye at a boiling temperature for one hour.

Milling Blue No. 2 produces a full and brilliant shade of blue and is a fast milling color.

Recipe No. 151.

Green on Cotton Yarn.

Diphenyl Green K G C on 100 lbs. cotton yarn.

Prepare the dye bath with
1 lb. Diphenyl Green K G C.
(John J. Keller & Co., 104-106 Murray St., New York.)
20 lbs. Common Salt.

Enter yarn at 160° F., bring to a boil and dye at this temperature for one hour.

Diphenyl Green K G C possesses good fastness to light, washing, acid and hot ironing. For union goods it is an excellent product, dyeing the wool slightly heavier than the cotton. It is also adapted to discharge work in printing.

Recipe No. 152.

Light Blue on Worsted Yarn.

Brilliant Wool Blue B on 100 lbs. worsted yarn.

Prepare the dye bath with
1 lb. Brilliant Wool Blue B.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)
20 lbs. Glauber's Salt.
5 lbs. Sulphuric Acid.

Enter the yarn at 180° F., bring to a boil and dye at a boiling temperature for one hour.

Brilliant Wool Blue B Extra can be recommended for cheap dark navy blues.

Recipe No. 153.

Blue on Worsted Yarn.

Wool Blue 5 B on 100 lbs. worsted yarn.

Prepare the dye bath with
1½ lbs. Wool Blue 5 B.
(Berlin Aniline Works, 72 Front St., New York.)

15 lbs. Glauber's Salt.
3 lbs. Sulphuric Acid.

Enter at 180°, bring to a boil and dye at this temperature for one hour.

Wool Blue 5 B is very useful in the dyeing of union goods, as it leaves the cotton undyed, and produces on wool, brilliant, pure blue shades and is splendidly suited for combinations with substantive coloring matters employed in the dyeing of union goods.

Recipe No. 154.

Black on Cotton Yarn.

Immedial Black N B on 100 lbs. cotton yarn.

Prepare the dye bath with

22 lbs. Immedial Black N B.
(Wm. J. Matheson & Co., Ltd., 182 Front St., New York.)
10 lbs. Soda Ash.
10 lbs. Sodium Sulphide.
80 lbs. Common Salt.

Enter the yarn at 170° F., bring to a boil and dye at this temperature for three-fourths of an hour, keeping the yarn under the surface of the dye liquor. Full directions for accomplishing this may be found in W. J. Matheson's publication on the dyeing of Immedial Black and Immedial Blue.

When the dyeing is completed the yarn is aftertreated for one-half hour at 170° F., in a bath made up with

3 lbs. Potassium Di Chromate.
3 lbs. Acetic Acid.

Immedial Black N B will be found an excellent black, and its fastness to washing, light, acids and milling is remarkable.

Recipe No. 155.

Green on Cotton Yarn.

Diphenyl Green K G C on 100 lbs. cotton yarn.

Prepare the dye bath with

2 lbs. Diphenyl Green K G C.
(John J. Keller & Co., 104-106 Murray St., New York.)
20 lbs. Common Salt.

Enter yarn at 160° F., bring to a boil and dye at this temperature for one hour.

Diphenyl Green K G C possesses good fastness to light, washing, acid and hot ironing. For union goods it is an excellent product, dyeing the wool slightly heavier than the cotton. It is also adapted to discharge work in printing.

Recipe No. 156.

Brown on Cotton Yarn.

Direct Dark Brown B on 100 lbs. cotton yarn.

Prepare the dye bath with

3½ lbs. Direct Dark Brown B.
(O. S. Janney & Co., 8-10 Letitia St., Philadelphia, Pa.)
20 lbs. Common Salt.

Enter the yarn at 180° F., or at a boil, and dye at a boil for one hour.

Direct Dark Brown B possesses a full and rich shade of Brown, and one possessing unusual fastness against washing, scouring, light, and if aftertreated with copper sulphate or potassium di chromate is rendered extremely fast. This treatment can take place in a separate bath, or in the same bath, but in the latter case the dye bath could not be used as a standing kettle.

This color is well adapted for any class of cotton work and can be used to advantage in hosiery work, and also in discharge work.

Recipe No. 157.

Black on Cotton Yarn.

Colonial Black on 100 lbs. cotton yarn.

Prepare the dye bath with

5 lbs. Colonial Black.
(F. E. Atteaux & Co., 176 Purchase St., Boston.)
40 lbs. Common Salt.

Enter at 160°, bring to a boil and dye at a boiling temperature for one hour.

Colonial Black produces a full and rich shade of black of excellent fastness to exposure, and with the use of a comparatively small percentage of dyestuff.

This dyestuff is also of value in the dyeing of wool, and union goods.

Recipe No. 158.

Peacock Blue on Worsted Yarn.

Fast Blue A on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Fast Blue A.

(United Indigo and Chem. Co., 176 Federal St., Boston.)

3 lbs. Sulphuric Acid.

10 lbs. Glauber's Salt.

Enter at 180°, bring slowly to a boil and dye at a boiling temperature for one hour.

Fast Blue A produces a brilliant shade of peacock blue, which is very fast to fulling and light. They also dye very evenly and are valuable colors for shading and toning.

Recipe No. 159.

Magenta Red on Worsted Yarn.

Fast Acid Magenta G on 100 lbs. worsted yarn.

Prepare the dye bath with

2 lbs. Fast Acid Magenta G.

(Victor Koechl & Co., 122 Hudson St., New York.)

15 lbs. Glauber's Salt.

4 lbs. Sulphuric Acid.

Enter at 170° F., bring to a boil and dye at this temperature for one hour.

Fast Acid Magenta G produces an even and brilliant shade of Magenta Red possessing excellent fastness.

Recipe No. 160.

Green on Worsted Yarn.

Milling Green on 100 lbs. worsted yarn.

Prepare the dye bath with

2 lbs. Milling Green.

(E. M. Thayer, 106-112 Broad St. Boston.)

15 lbs. Glauber's Salt.

2 lbs. Sulphuric Acid.

Enter material and bring to a boil and dye at this temperature until the desired shade is obtained.

Milling Green goes on the fibre evenly and produces a fast and pleasing shade of green.

—Acid tanks for carbonizing wool are now being made of earthenware in Saxony. The acid has no effect on this material and it is stated that these tanks are giving very good results.

The Dyer's Trade.

The overcrowded condition of the dyer's trade in Germany is pictured by one of the craft in a letter to the Leipzig Farber Zeitung. He admonishes dyers to remember the saying: "You should not praise the day before the night is come." When the would be dyer has completed his course of instruction in the technical school, he says to himself: "Now, a few years as assistant in some good dye house, and I will be a master dyer."

As assistant, however, he soon discovers that the practical side of his trade makes demands upon him of which he received no inkling during his school years. He is forced to the conclusion that the completion of a dyer's apprenticeship is an impossibility, and exclaims, "Why all these years wasted at school?"

The writer compares the necessity of constant oversight of his work by the dyer, by the ease with which other mill overseers can arrange their work so that it will be carried on without interruption during their absence from the mill. The exacting requirements as to matching shades finds no counterpart in any other department of the mill, and in addition to this the dyer must contend with much of the bad work done in other departments of the mill, the effects of which do not develop until the attempt is made to apply a color to the fabric.

As compensation for services in such an exacting trade the dyer's wages are ridiculously small, and his trade is looked down upon in many quarters. These facts lead the writer to appeal to young men to avoid the dyer's trade when selecting an occupation. These unfavorable conditions are ascribed first, to exacting requirements of the trade due to the demands of fashion; second, to the rapid increase of the already vast number of artificial dyestuffs; and third, to the large number of men who have

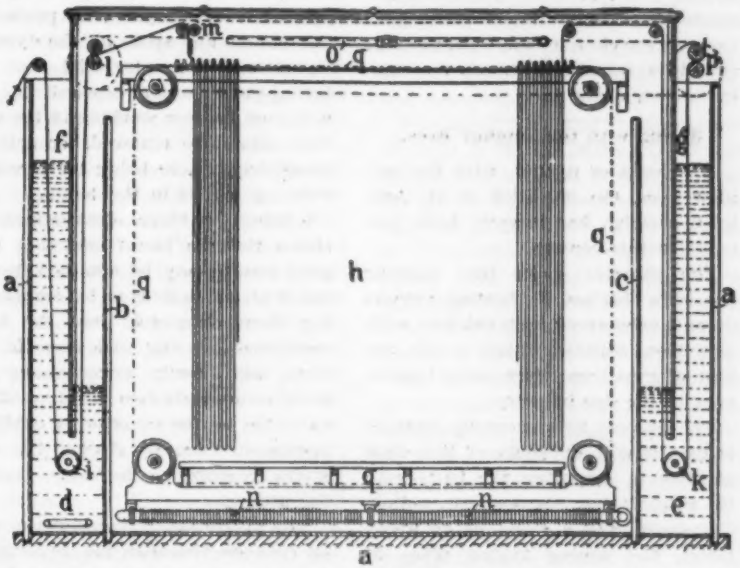
obtained a technical education and are seeking employment as dyers, thus causing dyer's wages to drop to an absurdly low level.

The German journal, while expressing the belief that the writer has slightly overdrawn the picture, says that there is doubtless a very unsatisfactory condition of affairs in the dyer's trade at present. A request for a dyer is usually responded to by twenty or thirty applicants, and the editor cites as a not unusual case, that a technical school graduate, 27 years old, who had received a practical training in the dye house, accepting a dyer's position in a worsted mill where he received twenty marks, about five dollars, per week.

This condition of affairs finds its counterpart in every calling, and while it may be worse in the thickly settled European countries, is duplicated to some extent here in the United States. The dyer's trade is, however, no worse in this respect than are other trades and professions, and the individual, while recognizing that these conditions are general, has the satisfaction of knowing that "there is always room at the top," no matter how crowded the lower floors may be. It is by no means an easy matter to secure practical men, thoroughly trained in the matching of colors and the production of uniform shades.

Continuous Bleaching Machine for Cloth.

A machine for continuous bleaching has been invented in Germany, and is shown in the accompanying illustration. It consists of an outside tank, a, provided with two partitions, c and b, which divides the tank into three compartments, the centre one, h, and the two narrow ones, e and d.



A cover is placed over this tank, and the side walls, f and g, of this cover, project into the two compartments, e and d; as shown in the illustration, they do not reach to the bottom, an open space being left between the end of the wall and the bottom of the tank.

The compartment, a b, is filled with the dyeing or bleaching material, while the compartment, a c, is filled with the scouring or rinsing liquor. The inner room, h, is filled with steam, the pressure of which depresses the level of the liquor in the compartments, e

and d, on the inside of the walls, f and g, and elevates the liquor on the outsides of these walls.

The cloth first passes into the compartment, d, through the liquor around the guide roll, i, then through the squeeze rolls, l, into the steaming room. A suitable mechanism carries this cloth in folds, as shown in the illustration, and these folds are carried by a chain, q, from one end of the room to the other; the cloth finally is drawn by rollers through the liquor in compartment, e, then through the squeeze rolls, p, which completes the operation. The liquor squeezed through the cloth by the rolls, l and p, runs back into the tubs into the compartments, d and e.

Dyeing with the Sulphur Dyes.

A process of dyeing with the sulphur dyes, the invention of an Austrian chemist, has recently been patented in this country.

The patentee states that sulphur dyestuffs obtained by heating various organic substances with sulphur, with or without sulfids of alkali metals, are now of great and increasing importance in the dye industry.

The process now generally adopted in dyeing with dyestuffs of this class consists in preparing the bath with the sulphur dye, common salt, sodium carbonate, and a sulfid of an alkali metal, the dyeing taking place at nearly boiling-point, the material being kept as much as possible below the surface of the bath.

This mode of working, however, has great drawbacks and requires scrupulous attention, for if the goods be exposed to the air even for a comparatively short time, unevenness will ensue by the dyestuff separating out on the parts exposed to the air, and thus spots are produced which cannot be removed.

The reason why sulphur colors produce uneven and spotted dyes is, according to the observation of the inventor, to be found in the following: Sodium sulfid, which the dyestuff either contains when manufactured or which is added to the bath on dissolving the dyestuff, has a reducing influence besides a dissolving action on the dyestuff. Besides the dissolved dyestuff the bath contains also the dyestuff reduced to the leuco compound. The dyestuff not reduced and the dyestuff reduced appear to possess different affinities for the fibre. Therefore they dye the fibre in a different degree of shade, and, as the leuco compound readily oxidizes in contact with the oxygen of the air at ordinary temperature, an opportunity is given by the present mode of dyeing for producing unevenness and spots by the dyestuff separating on the material near the boiling-point when exposed to air, which on further working in the dyebath cannot be removed, or only incompletely, there being no excess of reducing agents in the bath.

Relying on these observations, he states that he has found that very good results may be obtained in dyeing with sulphur dyes by transforming them completely into the leuco compounds, dyeing with them in this form, and finally transforming the leuco compounds into the dyestuff by oxidation by the air or other oxidizing agents—in fact, by dyeing the dyestuffs according to the indigo-vat dyeing process.

The hydrosulphite-vat is better suited for reduction than the copperas-vat or zinc-vat; this is accounted for by the formation of compounds of the metallic salts and the leuco compounds of sulphur dyes, which are soluble with difficulty. The preparation of the vat and the dyeing therein are in general the same as with indigo, only the additional excess of lime is generally not required, as when dissolving indigo-white.

The leuco compounds possess great affinity for the fibre. They dye rapidly and evenly, while cold rinsing will hardly, if at all, remove them from the fibre. The "turning green" of the shade begins immediately in an exceedingly even manner on the goods

being taken out of the bath and rinsed. The formation of the dyestuff being completed by exposure to the air, the shades may be transformed into thorough fast tints by subsequent treatment with metallic salts or other oxidizing agents, as is done after dyeing in a bath containing sulphides of alkali metals.

As with the indigo-vat, the same material may be introduced several times, the colors becoming stronger and deeper by giving two or more dips. The remarkable fact here is that the shades treated with oxidizing agents, such as sulphate of copper, after the first immersion yield on a second and subsequent immersion disproportionately stronger and more powerful colors than when merely exposed to the air.

The method described is of particular importance, as the reduction of the sulphur dyes may be combined with the vat-dyeing of indigo, it thus being possible to obtain in one vat with the recognized fast-sulphur dyes and indigo shades just as fast, yet essentially cheaper, than those obtained with indigo alone and also faster shades than those of indigo, which are topped with other colors.

For dyeing in the vat the most suitable are the dyestuffs known as "immedial-blue C," "immedial-black G and V extra" (Cassella), "Katijenblue" (Bayer), "Noir Vidal" (St. Denis), "Clayton fast-black D," and other sulphur dyestuffs.

Example: Four kilos of the dyestuff obtained from para-oxy-para-amidodiphenylamin-o-sulphonic acid are treated with sixty litres of hydrosulphite solution of 13° Baume specific gravity at 50° to 60° centigrade till the color of the solution becomes brown yellow. The leuco compound, thus obtained, is then poured into the vat containing about 2000 litres of cold water. The mode of working this vat depends upon the nature of the material to be dyed and is carried out according as loose material, yarns, stuffs, cops, etc., are employed in a similar manner as with indigo.

A New Dyestuff.

Naphthazarin, which has long been used as a dyestuff, yields on reduction a compound which is considered to be tetrahydroxy-naphthalene. This has not been used or looked upon as a dyestuff, nor has it received any industrial application.

It is claimed by one, who has recently secured a patent for the process, that this compound is well suited for use as a dyestuff, in that it dyes animal fibre directly and combines with metallic mordants, such as alumina or chrome, producing shades which on suitable treatment can be converted into black-lakes of great intensity and fastness.

The shade produced on unmordanted wool is brown, while cotton mordanted with alumina is dyed a yellowish shade, which becomes darker on exposure to air. The dyeings produced on unmordanted material become darker when treated with a suitable oxidizing agent, and if chromates, which are especially suitable, be employed, a fast black-lake is formed.

The dyestuff on mordanted material is converted into a black metallic lake when treated with bichromate of potash, or another suitable oxidizer, which need not contain a chemically combined metal.

The solubility of tetrahydroxy-naphthalene in water is such that the dyeings produced by its aid are of great evenness. At the same time they possess great intensity. The dyeings produced by a given weight of tetrahydroxy-naphthalene and subsequent treatment with chromates are said to be twice as intense as the dyeings produced by the same weight of alizarin-black.

—Reports from Mexico state that a machine has been invented there, which promises to solve the long-pending problem of getting out the fibre of the maguey plant, which yields pulque, and grows on the Mexican tablelands in enormous quantities.

MILL NEWS.

Cotton.

New Mills.

—*Alabama, Scottsboro. Contract has been awarded for erection of the buildings for the Broadus Cotton Mills. This project has been under way for some time.

—*Arkansas, Monticello. The Anderson Cotton Mills, which have been incorporated with capital stock of $100,000, with T. H. Mathews, president and W. N. Brown, agent and superintendent, expect to be ready for production of goods about January 1st, 1902. The mill will have an equipment of 5,000 spindles and 150 looms for making osnaburgs and sheetings, using steam. Catlin & Co., of Boston, will handle the product.

—*Canada, Valleyfield. The Montreal Cotton Company, which is still in the market for some of the equipment, expects to have the new mills, which will be called the Gault Mills, in operation January 1st, 1902. Dress goods, linings, uphostery goods and yarns, 20s to 50s will be made. Equipment will consist of 18,000 mule and 18,432 ring spindles and 900 looms. A. F. Gault is president; D. F. Smith, secretary and treasurer and Fred Lacey, general manager.

—*Connecticut, Bridgeport. A new plant for manufacturing Nottingnam lace curtains will soon be started up here as the Skidmore Lace Curtain Co. Mr. H. A. Skidmore, of Somerville, Mass., is interested.

—*Georgia, Eastman. Work is being pushed to completion on the Eastman Cotton Mills, which contemplate starting up 5000 spindles during December. They will probably install an additional 5000 early in 1902.

—*Georgia, Tifton. The machinery in the Tifton Cotton Mills, which was to have been started up last August, has now been put in operation and will be running to its full capacity, 5152 spindles, shortly. Thread yarns and lace curtain yarns will be made.

—*Georgia, Winder. Work is progressing on the new building for the Winder Cotton Mills. All the shafting has been placed and the plant is ready for installation of the machinery. W. M. McElroy is secretary and treasurer of the plant.

—*Indian Territory, Davis. The cotton mill project reported under the head of Davis, Tex., will be located at or near Davis, Indian Territory. The machinery equipment will come from the cotton mill now located at Janesville, Wis., consisting of about 23,000 spindles and 750 looms. The Janesville property has been for sale for some time. The new company will be known as the Indianola Cotton Mills, and will make brown domestics. Capital stock will be $300,000. It is expected the plant will be in operation about September 1, 1902. W. T. Croslen is among interested parties.

—*Louisiana, Monroe. The building for the Ouachita Cotton Mills has been completed. As nearly all the machinery is here, it is thought that the mill will be ready to start production of goods early in October.

—Massachusetts, Westboro. A Mr. Knight and J. W. Mason (formerly of Pawtucket, R. I.) are interested in the establishment of a tape factory at this place. A building has been secured and work will start soon on installing the equipment, used for manufacture of cotton and linen tape.

—*Mississippi, Aberdeen. An effort is now under way to push the subscriptions to the capital stock of the new mill projected, until the necessary capital, $100,000, has been guaranteed.

—*Mississippi, Kosciusko. The new Kosciusko Cotton Mills have begun manufacturing. This mill has an equipment of 5000 spindles and 160 looms, which they contemplate doubling as soon as they find it expedient.

—*North Carolina, Bessemer City. Work is well under way on the new mill for the Bessemer City Cotton Mills. It is thought that the plant will be ready for operation this fall. John A. Smith is president and manager of the concern.

—*North Carolina, Gastonia. The incorporation of the Loray Mills, at Portland, Maine, refers to plant at this place, which reorganized under a new charter in Maine for purpose of having more liberal provisions. The permanent officers of the plant have not yet been elected. It is expected to have the mill, which will be equipped with 50,000 spindles, in operation during October.

—*North Carolina, Smithfield. The Smithfield Cotton Mills have been put in operation, making 20s to 26s yarns.

—*North Carolina, Weldon. The yarn spinning mill of the Weldon Cotton Manufacturing Co., a separate building from their knitting mill, has been put in operation, making mule spun yarns, 10s to 20s, with equipment of 2016 mule spindles.

—*Pennsylvania, Attleboro. Work has been started up clearing the ruins of Fred'k Rumpf's Sons' mill, which was destroyed by fire, preparatory to rebuilding same. The work will be pushed to completion as rapidly as possible.

—Pennsylvania, Philadelphia. John Laycock is operating a small plant with equipment of two looms at 2627 Mutter Street, making cotton tapestry curtains.

—*South Carolina, Laurens. L. A. McCord confirms our report about the yarn mill proposed at this place. They are now securing the necessary information regarding the project. No contracts have yet been made and it will probably be January 1st, before any purchases are made.

—*South Carolina, Liberty. The machinery has been placed in position in the Liberty Cotton Mills and the plant will soon start production of goods.

—*South Carolina, Whitmires. The Glenn-Lowery Manufacturing Co. will soon start production of goods in their new mill. William Coleman is president of the concern and J. K. S. Ray, general manager. Steam will be the motive power.

—*Texas, Belton. Work has been started up in the new plant of the Belton Cotton Mills. Brown sheeting is made at the mill.

—*Texas, Gonzales. The building for the Gonzales Cotton Mill has been completed. Plant will not be ready to start operations for several months on account of delay in receiving the machinery.

—*Texas, West. The West Cotton Mills have been about completed.

Enlargements and Improvements.

—Connecticut, Danielson. New carding and spinning machinery has been received and will be immediately installed in the Danielsonville Cotton Mill, operated by the Cochrane Mfg. Co. They will also add some looms and start manufacturing another kind of fabric.

—*Georgia, Jefferson. At a meeting held recently by the stockholders of the Jefferson Cotton Mills, it was voted to install 6000 additional spindles in the mill. Plans have been made for the addition to be built.

—Georgia, Moultrie. At a meeting held recently by the directors of the Moultrie Cotton Mills, it was voted to increase the capital stock to $125,000. They will also add 125 additional looms (which have been ordered) to the plant.

—Georgia, Rome. An addition of one story will be made to the Anchor Duck Mill and also new machinery installed. About $25,000 will be expended.

—Illinois, Chicago. Plans have been prepared for the erection of a large addition, 150 by 200 feet, five stories, to the McCormack Harvesting Machine Co.'s mill at Blue Island and Oakley Avenues. The estimated cost of the new building is $175,000.

—Maine, Westbrook. The Dana Warp Mills are making preparations to erect a new dyehouse.

—*Massachusetts, Easthampton. The new building to be erected for the West Boylston Mfg. Co. will be for a stock department and not for manufacturing.

—*Massachusetts, Fall River. Contract has been let by the Stevens Manufacturing Company for the erection of their new mill. Among the new buildings to be constructed will be a spinning mill, 144 by 278 feet, two stories; a weave shed, 100 by 225 feet, one story; a store house, 100 by 50 feet, and an addition to the boiler and engine house. Machinery equipment has not yet been decided upon.

—Massachusetts, Holyoke. The Holyoke Thread Company is to increase its capital stock to $100,000. In order to get the work out on time they propose running the mill nights.

—*Massachusetts, Malden. Charles H. Niedner expects to have his new addition, in which 20 hose looms will be installed, ready to start operations by January 1st, 1902. Has not yet made arrangements for some of the power transmission.

—Mississippi, Tupelo. It is reported that the Tupelo Cotton Mills contemplate doubling the capacity of the plant.

—North Carolina, Charlotte. The Ada Manufacturing Company have contracted for new cards and drawing frames to replace some old ones in their plant.

—North Carolina, Franklinton. It is reported that the Sterling Cotton Mill, making yarns, will install looms in the plant in the near future and weave their entire output.

—*North Carolina, Troy. The Smitherman Cotton Mills will have their additional looms in operation about November 1st.

—North Carolina, Wilson. The Wilson Cotton Mills have resumed operations, having been shut down a few weeks for repairs, etc. Additional machinery has been added which largely increases the capacity.

—Rhode Island, Anthony. The Quidnick Manufacturing Company is installing new carding and spinning machinery in the plant.

—Rhode Island, Pawtucket. The Smith Webbing Company has leased twenty looms in an outside mill on account of increased business.

—Rhode Island, Woonsocket. About twenty additional looms are being installed in the second floor of the Hamlet Textile Co.'s mill. They will be used in manufacture of a new kind of fabric to be made.

—*South Carolina, Darlington. The report that the Darlington Cotton Mills would install additional looms, we learn is erroneous.

—South Carolina, Rock Hill. Arrangements are being made by the Chicora Cotton Mill for erection of two large cotton warehouses.

—Tennessee, Fayetteville. It is reported that the Elk Cotton Mills are making arrangements to increase their spindle capacity, and that additional machinery will be in operation by January 1st.

—*Texas, Gonzales. Bids have been advertised for by W. M. Fly, manager of the Gonzales Cotton Mills, for a cotton warehouse and 20 cottages for the operatives.

Mills Starting Up.

—Alabama, Anniston. Operations have been resumed in the Anniston Mfg. Co.'s plant, after shut down of nearly three months, during which time extensive repairs and improvements have been made to the plant.

—*Connecticut, Killingly. The cotton Mills formerly owned by the Mashentuck Mill Company and subsequently by W. R. Klein, have been purchased by Providence capitalists. Operations will be started up again as soon as necessary repairs can be made. Louis Bartlett, formerly superintendent, will be in charge.

—*Georgia, Cochrane. Operations have begun in the Cochrane Manufacturing Company's mill.

—*Massachusetts, Lawrence. Operations have been resumed in the Pacific and Pemberton Mills, which have been shut down for one and two weeks respectively.

—*Massachusetts, Methuen. Operations have been resumed in the Methuen Company's mill.

—*New York, New Hartford. Operations have been resumed in the New Hartford Cotton Mfg. Co.'s mill, which has been shut down for two weeks.

—*North Carolina, Weldon. Operations have been started in the new plant of the Weldon Cotton Manufacturing Company.

—*Rhode Island, Arcadia. Operations have been resumed in the Roger Williams Cotton Mills, which were shut down in August, owing to lack of water, and during which time extensive repairs have been made.

—*South Carolina, Rock Hill. Operations have been resumed in the Chicora Cotton Mills, which have completed installation of new machinery.

—Vermont, Burlington. Operations have been resumed in the Burlington Cotton Mills which have been shut down while needed repairs were made to the boiler and machinery.

—*Virginia, Ettricks. Operations have been resumed in the Pocahontas Cotton Mills, which have been shut down for about ten weeks. During idleness about $10,000 was expended on repairs and improvements to the plant.

Mills Shutting Down.

—Massachusetts, Fall River. The plant of the Stafford Mills, with exception of the carding, spooling and warping departments in No. 2 Mill has been closed, as result of strike prevailing among the weavers and speeder tenders.

—New York, Valatie. The Wild Manufacturing Co.'s plant has been shut down indefinitely.

Woolen.

New Mills.

—*Kansas, Topeka. Work has been started installing the machinery in the new mill of the Western Woolen Company. J. F. McAfee is general manager and superintendent of the plant.

—Maine, West Buxton. A small carding mill has been started here by Willis Crockett.

—*Massachusetts, Auburn. The Pondville Woolen Mills have been incorporated with capital stock of $50,000. This is the mill in which Messrs. Sidney Segal and Moses G. Rosenberg, are interested.

—Massachusetts, Newton. Mr. Hislop is manager of the new concern which has purchased the wool shop, which is two stories and contains the French spinning machinery, of the Nonantum mills. Operations are expected to start up this week. Mr. Ham, formerly boss spinner for the Nonantum Mills, retains same position with the new company.

—Ohio, Cincinnati. Henry Kressel, of Indiana, has formed a company to start manufacture of woolens in this city and is now looking for a suitable building in which to install the machinery. About 100 people will be furnished employment.

—*Pennsylvania, Downington. The old woolen mill at this place, which has been purchased by Wm. Souls' Sons, New York, will be operated under name of the Rockstone Mills, with Charles E. Horton, manager, and F. L. Putney, superintendent. They will install 60 additional Knowles looms in the plant, which will make cotton warp meltons.

—Wisconsin, Appleton. D. Levinson of this place is interested in organizing a company for starting up either a plant for making rugs or a knitting mill. They are getting full information on both subjects, though, before anything definite will be done.

Enlargements and Improvements.

—California, Marysville. A shoddy plant has recently been started by the Marysville Woolen Mills and will be operated in connection with the main mill. Electricity is the power used by both plants.

—Connecticut, Mystic. The Mystic Manufacturing Co. will make an enlargement of one story to the plant and also some extensive repairs, additional looms are also to be added.

—Kentucky, Louisville. The Falls City Jeans and Woolen Co. has installed forty additional looms in the plant for manufacturing cassimeres.

—Maine, Dexter. An addition, 20 by 30 feet, brick, is under construction for the Wassookeag Woolen Company, to be used for an office. Dyestuffs will be stored in the basement.

—Maine, Dexter. A new set of cards has recently been added to the Amos Abbott Co.'s mill equipment. Plant is being operated overtime.

—Maine, Hartland. The Linn Woolen Company recently installed a new engine in the plant and built a new storehouse about 20 by 60 feet, the top story of which will be used for manufacturing purposes. They contemplate installing additional machinery at an early date.

—Maine, Skowhegan. The American Woolen Company will tear down the old power house and erect a new one on the site. A 300 h. p. water wheel will be

installed, replacing two small wheels formerly used.

—*Maine, Springvale. Ground has been broken for the addition to be built to the Maine Alpaca Company's plant.

—*Maine, Wilton. Work is progressing on the new mill under construction for F. J. Goodspeed. The new building is 110 by 60 feet, with boiler house, 25 by 40 feet. He contemplates installing finishing and dyeing machinery in the new mill.

—Massachusetts, Agawam. The Agawam Company, which is running the operated until late nights, are considering plans for building a second story to the weave room in the L part of the mill.

—*Massachusetts, Clinton. The new dyehouse for the Bigelow Carpet Company is almost completed and work has been started installing the equipment.

—Massachusetts, Fitchburg. The Star Worsted Company, which is running the plant to full capacity, is erecting two additions on Sheldon Street, for purpose of increasing same.

—Massachusetts, Millbury. The Mayo Woolen Company of this place has purchased the property of the Wheeler Cotton Mill, of which Samuel E. Hull, was one of the owners. The mill, which will be equipped with new machinery, will be a four-set plant when ready. Woolen goods will be made.

—*New Jersey, Camden. The Fries-Breslin Company, which recently completed an addition to their plant, will build another story to the office building, in which they will install weaving machinery. This will furnish employment for about 60 additional people.

—New York, Fulton. Fifty additional looms are to be installed in the Fulton Worsted Mills, operated by the American Woolen Company.

—New York, Waterloo. The Waterloo Woolen Mills will install additional looms in the basement of the mill for purpose of increasing the weaving capacity.

—Ohio, Cleveland. The Turner Worsted Co. has let contract for the erection of a new mill, which they propose equipping with six sets of worsted machinery. M. A. Furbush and Son Machine Co. furnish the cards and The Lowell Machine Shop, the drawing, spinning and twisting.

—Pennsylvania, Philadelphia. A large storage building, 237 by 87 feet, will be built for the Philadelphia Tapestry Mills at Howard Street and Allegheny Avenue.

—Pennsylvania, Philadelphia. Work is soon to be started by the Wingohocking Mills Co. on the erection of a large three story building.

—*Pennsylvania, Reynoldsville. The Reynoldsville Woolen Company, which has recently started manufacture of underwear in the plant, have added 10 new looms, giving them a total of 22, and 16 new knitting machines.

—Pennsylvania, Tunkhannock. The Winola Worsted Yarn Co. contemplates increasing the capacity of the plant.

—West Virginia, Morganton. Operations have been temporarily suspended in the Monongahela Textile Company's plant for purpose of replacing the present machinery with new for making cloth for women's clothing.

—Wisconsin, Onalaska. Efforts are being made by the Onalaska Wool Manufacturing Co., to increase the capital stock to $3500 for purpose of erecting an addition and equipping same with machinery for weaving woolen goods. Of the $1500 required, it is reported that $800 has already been secured.

Mills Starting Up.

—*Massachusetts, Blackinton. Operations have been started up in the carding and spinning departments of the Blackinton Co.'s mill, making yarn for Strong, Hewatt & Co. The dye house is also in operation. No definite arrangements have yet been made about operation of the mills in the future.

—*Massachusetts, Holyoke. The Grosvenor Woolen Co., Palmer, Mass., expects to start operations in Connor Bros. mill, recently purchased, about October 1st. Plant has an equipment of 7 sets cards for making shoddies, wool extracts and flocks. This will not disturb the regular routine of the Palmer plant.

—Massachusetts, Uxbridge. The Charles C. Capron Mill, purchased about a year ago by the Whitinsville Savings Bank at a foreclosure sale, has been bought from that concern by Charles W. and John R. Scott, the latter now operating the Piedmont Mill at Worcester. The mill is a five set one, and has been recently operated by the Norfolk Woolen Company, making blankets and yarn.

—Pennsylvania, Philadelphia. J. A. Campbell & Bro.'s plush mill, in which operations have been suspended for some time, has again been put in operation.

—*Rhode Island, Harrisville. The Hope Worsted Mills have begun operation. A new dynamo has been installed in the plant.

Mills Shutting Down.

—Massachusetts, Monson. The Massasoit Woolen Company, which has been operating a branch mill here, will stop running this mill for about six weeks. As the lease of the mill expires in January, it is not known whether work will be resumed or not.

—New York, Amsterdam. The Amsterdam Woolen Company's mill is not running, having been shut down indefinitely.

—*Ohio, Defiance. We now learn that the Nightingale Woolen Mills will be closed permanently, as the result of Mr. Nightingale's death. It is thought that the mills will be offered for sale at an early date.

—Virginia, Old Town. Operations have been suspended for the present year in the Grayson Woolen Mills, which were damaged by the recent freshet.

Knit.

New Mills.

—*Michigan, Owosso. The new building for the Burnett Knitting Company is nearing completion.

—*Mississippi, Columbus. The machinery has arrived and is being installed in the Columbus Hosiery Mills.

—*New York, Sidney. Operations are expected to start about November 1st in the new mill established here and known as the Monarch Knitting Co. Company has capital stock of $25,000, with G. B. Cramer, president, and H. Dutson, secretary and treasurer. They will manufacture ladies' silk vests and knit goods, operating from eight to twelve knitting machines, with electric motor. Goods are to be sold direct.

—*North Carolina, Winston-Salem. Twenty knitting machines are being installed in the new plant to be started here by L. A. Vaughn, as the Vaughn Knitting Mills.

—*Pennsylvania, Lyons. The new knitting mill established here by Madeira & Warner for manufacturing hosiery, has been put in operation. About eight machines have been put in place.

—Pennsylvania, Montello. It is reported that a stocking factory will be started here in John Meli's warehouse, which has been leased by Denver parties for that purpose.

—Pennsylvania, Reading. Operations will soon be started by the Keystone Knitting Company, recently established at this place, making high grade hosiery. The company has capital stock of $50,000, with W. D. DeLong president and J. K. Seaman, secretary and treasurer. About fifty people will be employed at first.

—Pennsylvania, Reading. A new building to be erected on Front Street by H. R. Epler will be utilized for manufacture of hosiery.

—*Pennsylvania, Reading. The Keystone Knitting Company which has begun operations, making hosiery, has changed firm name to The Crown Knitting Company.

—*Rhode Island, Pawtucket. The Invincible Knitting Co. are starting up at this place to manufacture men's, women's and children's hosiery on circular machines. They have just got the plant in operation, employing about 15 hands. F. N. Blake is the agent and George E. Moore superintendent and buyer. There is no dyehouse. They have not yet made arrangements for a selling agent, but are now giving that matter consideration.

—*South Carolina, Bowling Green. The Bowling Green Knitting Mills have been incorporated with capital stock of $15,000, with T. J. Patrick, president; R. M. Dulin, treasurer, and G. S. Marville, superintendent. They will manufacture ribbed underwear and union suits, operating 14 knitting machines and using steam power.

—*Virginia, Alexandria. The Alexandria Knitting Mills expect to be ready to begin production of goods about the middle of October. In addition to list of officers previously given, is P. M. Yost, holding position of superintendent. The new building, nearly completed, is 40x80 feet, two stories, with an engine room, 15x24 feet. They will make fine hosiery.

—*Wisconsin, Beloit. Plans have been completed and excavations started on the new buildings to be erected here for the Racine Knitting Company, and as soon as they are erected, hosiery departments of Racine and Stevens Point plants will be removed here. The main building will be 210 by 60 feet, two stories, and a smaller building, 106 by 75 feet, one story, for office, engine and boiler rooms. The underwear department will be located at Stevens Point. A bonus of $25,000 was raised by the citizens to secure the enterprise.

—Wisconsin, Madison. It is reported that Anton Kinsman of Kalamazoo is interested in the new knitting mill which will be established here with capital of $10,000.

—Wisconsin, Two Rivers. Charles Schmidt and William Bremer, the latter of Manitowoc, are interested in a new knitting mill which will be erected here. The building will be 40x80 feet, 2 stories high.

Enlargements and Improvements.

—Canada, Almonte. An addition of one story to the main mill and another for office use, for which contract has been awarded, will be built to the Anchor Knitting Company's mill.

—*Georgia, Marietta. The installation of 17 more machines to the equipment of the Marietta Knitting Company's plant will increase their number of machines to 116. Company now has capital stock of $100,000, of which $50,000 is paid in.

—*Michigan, Grand Rapids. The Globe Knitting Works have started removing their machinery to the new building recently erected and expect to be ready for work in about a week. A bleachery is being established in the basement of their new quarters.

—New York, Averill Park. Work has been partially suspended in the Faith Knitting Mill, while repairs are going on.

—*North Carolina, Newton. The Newton Hosiery Mills, which recently installed a dye plant in the mill, are putting in a new 50 h. p. engine and a large power press.

—*North Carolina, Tarboro. The Runnymede Hosiery Mills inform us that they are only installing a dye plant and are in the market for necessary equipment.

—Ohio, Piqua. Contract has been let to A. M. Fry by the Atlas Underwear Company for erection of a two-story addition, 25 by 90 feet, to the plant. They contemplate starting work in the new addition by t he middle of October.

—Pennsylvania, Boyertown. A large addition is being built to George W. Unger's underwear mill. The entire

building is being increased to four stories.

—Pennsylvania, Chambersburg. The Chambersburg Hosiery Company will build an addition, 50 by 45 feet, to the plant. This will furnish employment of a number of additional people when completed.

—Pennsylvania, Coplay. A new building, 20 by 40 feet, two stories, has been erected for the Coplay Knitting Mill Co. They will install the department making ladies' underwear in the new addition.

—Pennsylvania, Elizabethville. The Enterprise Hosiery Mills, which are building an addition to their mill, will install 20 new knitting machines, giving them a total of 62, when completed.

—*Pennsylvania, Norristown. Lewis E. Taubel advises us that report of extensive enlargements to plant is erroneous, as nothing but a small addition will be made to the dye house.

—Pennsylvania, Philadelphia. Work has been started on erection of an addition, 32 by 31 feet, three stories, to the building occupied by R. Gutsche, at Randolph and Jefferson Streets.

—Pennsylvania, Reading. The capital stock of the Hampden Knitting Mill has been increased from $20,000 to $50,000. The capacity of the plant is to be doubled.

—Pennsylvania, Reading. The Hawk Hosiery Company, manufacturing half hose, is installing 50 new knitting machines in the plant.

—*Rhode Island, Woonsocket. Contract for the erection of the new mill for the Leicester Knitting Company has been let to James E. Bradford. Ground has already been broken and work on the foundations will start in a few days. The building will be brick, about 64 by 50 feet, three stories high.

—Tennessee, Sweetwater. The Mascot Knitting Mills will build a new brick three story building in which they will remove their present equipment. They are also considering project of installing some spinning machinery in the new building.

—*Virginia, Petersburg. A. S. Reinach & Son, proprietors of the Petersburg Hosiery Co., whose plant was damaged by fire, expect to resume operations in the early part of September, as the new building erected on Guarantee Street will then be completed.

Mills Starting Up.

—*Connecticut, Manchester Green. Operations will probably be started the latter part of the month in the Glastonbury Knitting Company's mills, which have been shut down for some time. Extensive repairs have been made to the plants.

—*New Hampshire, Franklin Falls. Part of the machinery has been started up in the Aiken Hosiery Mill, but nothing definite is yet known when mill will be running in full.

—*New York, Amsterdam. Work has been resumed in the Gardiner & Warring Co.'s mill which has been shut down for several months.

—New York, Cohoes. Operations have been resumed on full time in the Tivoli Knitting Mills, Nos. 1 and 2 of the Root Manufacturing Company.

—*New York, Rossman. Operations have been resumed in full in the Rossman Knitting Company's mill after a shut down of about two months.

—New York, Stittville. The Empire Knitting Mills, Hackett & Atwood, proprietors, have been started up, having been shut down for about three weeks, during which time general repairs were made to the plant. About $1500 was expended.

—*North Carolina, Charlotte. The Gold Crown Hosiery Mills have sold their yarn spinning plant and will remove their knitting plant to Zirconia, N. C., where a water power was purchased last year. All necessary supplies incident to making removal have been contracted for.

—Pennsylvania, Nazareth. Work has been resumed in Henry Kraemer's hosiery mill, which was shut down last week, during which time changes and repairs were made to the mill.

—*Vermont, Bennington. Operations have been resumed in full in the Tiffany Knitting Mill, which has been shut down some time.

Mills Shutting Down.

—New York, Amsterdam. The plant operated by the Liddle Knitting Co., making underwear and overshirts, has been shut down.

—New York, Amsterdam. The Greene Knitting Company's mill has been shut down indefinitely.

—New York, Amsterdam. The Progress Mill, operated by John Warner's Sons, has been closed temporarily.

—*New York, Philmont. The Summit Knitting Mill has been shut down permanently.

—New York, Waterford. The Massasoit Knitting Company's mill is reported shut down.

—Pennsylvania, Philadelphia. Geo. Woodcock & Bros.' mill, on Collom Street, has been shut down indefinitely. It is thought that the concern, which manufactures shawls, hammocks and women's underwear, will be able to resume operations later.

Silk.

New Mills.

—New Jersey, Paterson. The A. B. C. Textile Co. is a new concern recently formed by Messrs. Brough and Abrams, to manufacture broad silks.

—*New Jersey, Paterson. The Coronet Silk Company has been organized with William J. Orr, president; Wm. W.

Uhlinger, treasurer, and Walter S. Lambert, secretary. This company has leased the Hamil Mill and started manufacture of silk ribbons.

—*Pennsylvania, Slatington. Work has been started on the erection of the new mill for the Slatington Silk Co., branch of Conze & Colesman, Langenburg, Germany. The main building will be 144 by 53 feet, three stories.

Enlargements and Improvements.

—Connecticut, Willimantic. New looms are to be installed in the Windham Silk Co.'s mill.

—*Massachusetts, Whitman. The machinery is being set in place in the American Linen Fibre Company's plant and operations will probably be started in about a month.

—New Jersey, Paterson. Wm. Ball contemplates filling up the space vacated by Charles Frost with additional looms for making ribbons.

—New York, Hornellsville. The enlargement reported under way to Merrill, Field & Co.'s silk mill is only a dressing house.

—Pennsylvania, Athens. The Tioga Silk Company contemplates adding 14 more looms to the equipment, which will increase their looms to 100.

—*Pennsylvania, Bethlehem. Fichter & Martin will start at once installing additional machinery (recently received) in their plant about which report has been previously made regarding enlargement.

—*Pennsylvania, Danville. The machinery is being installed in the addition recently built to F. Q. Hartman's silk mill.

—Pennsylvania, Plymouth. An addition, 22 by 20 feet, is under construction to the Atwood Silk Mill, M. J. Atwood, proprietor, to be used as an office.

—*Pennsylvania, Newberry. The Lycoming Silk Mills have started up the new looms recently added to the equipment.

Mills Starting Up.

—*New Jersey, Clifton. The Barclay Silk Company, which will operate the new mill recently built on site of plant burned and previously operated by Barclay & Co., will start running Sept. 15th, making broad silks.

—*Pennsylvania, Pittston. The strike which has been prevailing at the Sterling Silk Mills for some time, nearly causing removal of the plant, has been declared at an end.

Mills Shutting Down.

—New Jersey, Hackensack. Givernaud Bros.' silk mill has been shut down for about four months, the outcome of a strike.

Miscellaneous.

New Mills.

—Massachusetts, Fall River. Contract has been awarded and work started on the erection of an addition, 3 stories, to the American Printing Company's mill. The annex will be used for a dye house and will cost about $50,000.

—New York, Haverstraw. The Haverstraw Dyeing Company has been incorporated with capital stock of $50,000 by Ewald Balthasar, Arthur Balthasar and Gustav Kowes, to dye silk yarns and all kinds of silk goods.

—*Ontario, Peterborough. Bids will be received by Adam Hall, president of the Canadian Cordage & Manufacturing Company, until September 14th, for erection of building, storehouses, boiler room and office building of the company's new plant.

—*Pennsylvania, Hamburg. The Keystone Bleachery, in which Wm. H. Grim is interested, expected to be ready to begin operations about the first of November, but it is now learned that the plant will probably not be ready before December 1st.

—*Rhode Island, Woonsocket. The Hart Textile Company, which leased the Ballou Mill, where a bleaching, dyeing and finishing plant was installed, has decided to purchase the property.

Enlargements and Improvements.

—*Pennsylvania, Philadelphia. Joseph R. Foster & Sons, who have started work on erection of addition to their dyehouse, expect to have same, which is to meet growing trade in the piece dyeing department, in operation in about eight weeks.

—*Pennsylvania, Reading. Elias Schulz, proprietors of the Liberty Dye Works, are now removing to their new plant, recently completed. New machinery has been added and the capacity greatly increased. The new building is 152x50 feet, two stories.

Mills Shutting Down.

—Massachusetts, Millis. The plant of the National Flax Fibre Co. is closed.

Fires.

—New Brunswick, St. John. The engine room of J. A. Humphrey & Sons' woolen mill has been gutted by fire.

—New Hampshire, Hinsdale. The large wool storehouse of the Haile & Frost Mfg. Co. has been destroyed by fire. The loss is estimated at $10,000.

—New York, Greenwich. About $1000 damage was done to Charles C. Groat's knitting mill, by fire, which started in the card room.

—New York, Syracuse. The Syracuse Silk Company's mill has been completely destroyed by fire. The loss is estimated at $40,000, with insurance of $25,000.

—Pennsylvania, Conshohocken. The Aramink Carpet Works, James Hall, proprietor, were gutted by fire recently. Loss is estimated at from $30,000 to $50,000. The mills had but recently resumed operations after a suspension of several

months, during which time considerable new machinery was added to the equipment.

—Pennsylvania, Philadelphia. The E. G. Chester Dyeing & Hosiery Company's plant was damaged by fire. Loss on stock and machinery is estimated at $10,000 while that on the building is about $3,000.

Failures and Suspensions.

—New Jersey, Paterson. The Smith-Baird Silk Company, manufacturing dress and tie silks and linings, has gone into bankruptcy. Henry Doherty has been appointed receiver. The liabilities are estimated at $76,000, with assets of $62,000.

—Pennsylvania, Philadelphia. David Greer, 9th and Dauphin Streets, manufacturer of worsteds and woolens, has filed a petition in bankruptcy. The liabilities are estimated at $115,431.23, with assets of $84,986.63.

Facts and Gossip.

—Alabama, Birmingham. It is reported that John T. Cochrane is interested in organizing a company to operate the Birmingham Cotton Manufacturing Company's mill for which propositions are under consideration to remove to Carrollton.

—*California, Petaluma. We have been advised by F. A. Cromwell, secretary of the Board of Trade, that the concern referred to in previous note regarding establishment of a woolen mill here, is E. R. Hawkins & Co., of Philadelphia. Nothing definite has yet been decided upon as various other sites are being offered. The company will manufacture a high grade of cloth and ramie underwear, wherever they may locate.

—Canada, Montreal. We understand that the Dominion Cotton Mills Co., which had projected very extensive changes in some of their plants and enlargements in others, with the view of increasing the capacity, have abandoned the idea for the present. Among other improvements a large dye house was to be built, which is shelved until a more opportune time presents itself.

—Canada, Sherbrooke. A. L. Grindod & Co. have changed their firm name to the Magog Woolen Mills.

—*Colorado, Denver. Ballard Bros. of Atlanta, Ga., have been conferring with President Wilson of the Chamber of Commerce regarding inducements for establishing a woolen or knitting mill at this place.

—*Connecticut, Montville. It is reported that preparations are being made for restarting the Montville Woolen Company's mill, which has been idle for the past three months.

—*Connecticut, Norwalk. No definite arrangements have yet been made regarding the establishment of a silk mill here by Jos. Loth & Co., of New York, although the matter is still being agitated.

—*Connecticut, Norwich. The plant of the Otrobando Woolen Company will be offered for sale Sept. 25th by Alonzo W. Sholes, the receiver. The equipment, which is complete, will be sold as it stands.

—Delaware, Wilmington. The Wilmington Cotton Mills will now be operated six days instead of four as heretofore. This mill has been running on short time during the summer.

—*Florida, Fort White. Chas. H. Thompson advises us that although he has been considering project of starting a knitting mill, he will thoroughly investigate the matter before proceeding.

—Florida, Jacksonville. It is reported that work will start in November on erection of a large silk mill for The Real Estate, Commercial & Investment Company of Jersey City, N. J., which has capital stock of $100,000, with P. L. Alberse (Jacksonville) secretary.

—*Georgia, Atlanta. R. L. Goodman informs us that although he has been making inquiries about lace curtain machinery, no definite action has yet been taken regarding new project.

—Georgia, Jefferson. The stockholders of the Jefferson Oil Mill, which has been absorbed by the Jefferson Cotton Oil Company, are considering the project of forming a company to erect and equip a knitting mill at this place.

—Georgia, Harmony Grove. It is reported that a project is on foot for establishing another large cotton mill at this place by local capitalists.

—Georgia, Montezuma. At a meeting recently held by the stockholders of the Montezuma Cotton Mills, Hon. E. B. Lewis was elected president and W. H. McKenzie, secretary and treasurer. The machinery is being installed in the plant, which will be started up as soon as possible.

—Indiana, New Albany. W. N. Rudy formerly of the Novelty Dye Works, is now connected with the Hoosier Dye Works and Mfg. Co. at this place.

—*Indiana, Peru. The Turner Manufacturing Company, of which Joshua Turner is president and manager, and which now operates the Peru Woolen Mills, will make further improvements to the plant, by installing a new napper. This mill contains seven sets, 3500 spindles and 32 broad looms.

—Iowa, Des Moines. It is stated that the Capital City Woolen Mills contemplate making further enlargements to the plant by erecting another large building for purpose of increasing the capacity of the plant and giving more available space for ready-made garments.

—Iowa, Dubuque. A new concern of which L. W. Johnson is manager and A. T. Verier, superintendent, will be established on the Dee property for making grain bags of cotton and tow. About 50 people will be employed at first.

—*Kentucky, Louisville. It is reported that the Mayfield Woolen Mills, which purchased the Old Kentucky Woolen

Mills, contemplate increasing the plant here and not removing it as has been meditated some time previous.

—*Louisiana, Ruston. The project of establishing a cotton mill here is again being agitated. This was first mentioned last January, when S. C. Huey was reported to be interested. It is reported that some English capitalists are willing to take $200,000 worth of stock, if the local capitalists will invest $50,000 in the enterprise. The Town Council will probably consider the matter.

—Maine, Hallowell. The Monitor Gas Manufacturing Co. is reported to be interested in purchase of the vacant cotton mill buildings for purpose of installing a large plant there. These mills have been vacant for a number of years.

—Maine, West Buxton. John Berryman is now equipping his new mill, which has never been put in operation, with two sets of machinery and expects to have it ready for operation during October. If he cannot sell or rent the plant, will start it up himself.

—*Maryland, Hagerstown. Collinge & Nolan Co. advise us that they will operate the Paterson Mill, and will not rebuild the plant destroyed by fire at this place.

—Massachusetts, Braintree. The John C. Trott Co. has been reorganized and incorporated at Kittery, Me., with capital stock of $150,000.

—Massachusetts, Dedham. The Merchants' Woolen Mill has had 50 new looms added to the equipment of the plant.

—Massachusetts, Fall River. It is reported that the new building near the Mechanics' Foundry and Machine Co., which is under construction, will be used for a silk weaving plant. Frederick W. Harley is mentioned as interested in the enterprise.

—Massachusetts, Lawrence. The Wamesit Mills, formerly owned by Tower, Wing & Co., and which have been idle for a number of years, have been purchased by Robert Carruthers, at a private sale from the creditors, who have held possession of the mills since the company's failure. The property will be rented for manufacturing purposes. The water rights were also sold.

—Massachusetts, Lawrence. W. H. Summersby, formerly of Pontiac, R. I., has been appointed to succeed E. C. Willey, as agent of the Atlantic Cotton Mills.

—Massachusetts, Medway. The wadding mill, Ray & Wilson, proprietors, is being operated over time, to fulfill orders.

—*Massachusetts, Milford. It is reported that work may be resumed in October in the plant of the National Silk Yarn Company, reorganization of the Magid-Hope Silk Mfg. Company, as matters at issue with present opponents will be settled by the court this month.

—Massachusetts, New Bedford. Edwin O. Knowles has been elected to succeed Benjamin Wilcox as treasurer of the Bristol Mill Corporation.

—*Massachusetts, North Adams. The machinery in the Eagle Mill, which has been discontinued by the Windsor Company, has been purchased by Syans, Fraser & Blackway, of Fall River, dealers in second-hand machinery. Nothing definite is yet known regarding the future of the mill which is being dismantled.

—Massachusetts, Pittsfield. It is reported that two woolen manufacturers, of Albany, have been looking over the property of the Bel-Air Mill and are considering leasing same for their manufacturing purposes.

—Massachusetts, Rochdale. Operations have been suspended for about three weeks in E. G. Carlton & Sons' mill. The company contemplates building another story to the wing of the building and installing additional machinery for spinning yarn.

—Massachusetts, Taunton. The Oakland Mills have been incorporated as the Oakland Mills Company with capital stock of $80,000. J. Howard Tidd is president and Joseph S. Tidd, treasurer.

—*Massachusetts, Worcester. The Worcester Carpet Company's plant, recently secured by M. J. Whittall, has now passed into his possession, the carpet company having removed personal belongings to the Stoneville Mill.

—Michigan, Ionia. It is reported that the Imperial Knitting Company will probably discontinue using prison contract labor and will locate a factory elsewhere.

—Mississippi, Greenville. The project of establishing a knitting mill is under consideration by H. T. Crosby. A capital stock of $25,000 is proposed.

—Montana, Billings. Dr. W. A. Allen is corresponding with parties interested in establishing a woolen mill here provided satisfactory inducements are made.

—*Nebraska, Kearney. The Kearney Cotton Mill was sold to the Union Savings Bank & Trust Company, of Cincinnati, September 9th, for $75,000.

—New Brunswick, St. John. The Richelieu Cordage Company is a new concern recently incorporated with capital stock of $75,000 by M. E. Agar, Wm. A. Campbell and others, for manufacturing and selling cordage and binder twine.

—*New Hampshire, Hooksett. James Freeman Brown is president of the Dundee Mills, recently reported incorporated under Maine laws, with F. E. Cox (Wakefield, Mass.), treasurer, and S. N. Bourne, agent. The capital stock is $200,000, of which $125,000 has already been paid in. They will continue the manufacture of crashes and other goods as previously made at the mill, when operated by the Hooksett Mfg. Co.

—New Hampshire, Tilton. Several looms have been added to the equipment of Carter & Morrison's mill at Northfield.

—New Jersey, Camden. The project of establishing a gingham mill here by a New York concern is reported to be under consideration.

—New Jersey, Newark. The Scottish Waterproofing Company, office 123 Ferry Street, is a new concern recently incorporated with capital stock of $5000 by Rowland F. Hill, John D. DeForrest, J. Watson and others. They propose manufacturing processes for waterproofing and treating textile fabrics.

—New Jersey, Paterson. The Kearsing Manufacturing Company is reported as a new incorporation, with capital stock of $100,000, to manufacture textile fabrics.

—New Jersey, Paterson. Charles Lombairde has removed his plant to the Pioneer Mill. He was formerly located in the Broomhead Mill.

—New Jersey, Paterson. Charles Frost, commission throwster, has removed to the Pioneer Mill.

—New Jersey, Waldwick. It is reported that J. A. Post's silk mill will be converted into a bleachery.

—New York, Albany. The machinery in Frank B. Graves' waste and shoddy mill has been sold.

—New York, Amsterdam. The Brookside Knitting Mills, manufacturers of fulled mittens, have gone out of business.

—*New York, Amsterdam. The machinery is being sold in the mill owned by the Estate of Willard McElwain and the concern is going out of business.

—*New York, Hudson. The plant formerly known as the Hudson Knitting Co. in which John McCauley was interested, is now operated as the Beaver Knitting Mills, with Edward F. McCormick, president; John W. Carlos, treasurer; Raymond E. Fuller, secretary, and J. H. Terwilliger, superintendent. Fine jersey ribbed underwear, oveshirts and mattress batting are manufactured.

—*New York, Jamestown. Work has been started up in the new mill established here by The Ahlstrom-Ashworth Company, making all grades of tops. The company expects to install spinning and drawing machinery on the second floor of the building, later.

—New York, New Hartford. The Armstrong & Baker Knitting Mill property was bid in at public auction recently by a Mr. Omans. It is probable that arrangements will be made for restarting the plant, which has been idle since last December, at which time the concern became insolvent.

—*New York, Phoenix Mills. Operations have been suspended permanently in the carding and spinning departments of the Index Knitting Mills.

—New York, Salamanca. Negotiations are being carried on by the Board of Trade with a concern operating a woolen mill at another location, relative to establishing their mill here.

—New York, Schenectady. The mill operated here by Chas. Hortsman & Co., making silk mittens and gloves, has gone out of existence.

—*New York, Utica. The Utica Steam Cotton Mills and the Mohawk Valley Cotton Mills have been consolidated and will continue operations under name of the Utica Steam & Mohawk Valley Cotton Mills Company, with capital stock of $2,000,000.

—*New York, West Eaton. The West Eaton Woolen Mills are being put in operation by W. A. Fraser, who recently purchased same. Mr. Carpenter, with Fred'k Vietor& Achelis, is the selling agent.

—New York, Valatie. The machinery in the Hall & Clark Mfg. Co.'s mill has all been sold and the plant closed.

—*North Carolina, Mountain Island. The Mountain Island Cotton Mills were sold on the 11th inst. for $175,000.

—North Carolina, Rockingham. At a recent meeting of the stockholders of the Great Falls Cotton Mills, it was agreed to sell the property in order to pay the indebtedness. W. H. Everett has been appointed receiver.

—North Carolina, Rocky Mount. A project is reported to be under way for organizing a company to build and operate a knitting mill.

—North Carolina, Troy. The Smitherman Cotton Mills are reported to start up 100 looms in the mill shortly.

—North Carolina, Wilson. It is reported that a project is on foot for the establishment of a cotton mill here.

—*Ohio, Cincinnati. The Novelty Dye Works, for which petition of dissolution has been made and receiver appointed, will be sold out.

—Ohio, Toledo. The Ohio Knitting Mills Company has been incorporated with capital stock of $25,000. Morris Rosenberg, Harry Kohn, Samuel Grasgreen, Alex. L. Smith and Geo. H. Beckwith are the incorporators.

—Oregon, Eugene. A proposition of erecting and operating a $45,000 woolen mill is being considered by local capitalists. The projector of the enterprise asks that one-third of the amount be subscribed for by the town.

—*Pennsylvania, Bangor. The new mill which is trying to secure subscriptions needed for locating the enterprise here, is the G. Y. S. Silk Co., recently organized at Paterson, N. J., by Fred W. Van Blarcom and Wm. E. Young.

—Pennsylvania, Bell's Landing. It is reported that James Pontefract & Son, whose woolen mill was destroyed by fire last May, have been looking at some property at another location and are awaiting acceptance of proposition made. If favorable, work will be started at once on buildings so that plant may be put in operation within a short time.

—*Pennsylvania, Kutztown. It is expected that the silk throwing mill, which has been shut down, will soon be started again, by Hartley Bros.

—Pennsylvania, Nanticoke. It is reported that a stocking factory will be established here by Paul Barrall.

—Pennsylvania, North Wales. The machinery of the Montgomery Textile Company (making suspender and truss webbings) has been sold by Sheriff Light to the Russell Manufacturing Company, of Middletown, Conn., for $6900.

—Pennsylvania, Philadelphia. Yewdall & Jones have been succeeded by the Yewdall & Jones Company, worsted spinners. Nathan R. S. Yewdall is president; John Jones, vice-president; Harry A. Jones, secretary, and John Fisler, treasurer.

—Pennsylvania, Philadelphia. The Schuylkill Worsted Mills Company, which has been recently reported incorporated, with capital stock of $1,500,000, will combine several large concerns in this vicinity, including the Phoenix Mills, at Manayunk, for which negotiations are now pending. William Brown is mentioned as probable manager.

—Pennsylvania, Philadelphia. The partnership of Hoffman, Corkran & Co., has been dissolved, Mr. Hoffman having formed a new firm with Peter H. Corr, of Taunton, Mass., as the Hoffman, Corr Mfg. Co., to operate the mill formerly run by Hoffman, Corkran & Co. Mr. Corkran will continue in business for himself.

—Pennsylvania, Philadelphia. The Art Knitting Co., manufacturing sweaters and jackets,is now located at 240 Church Street. Plant was formerly located at 1424 Frankford Ave.

—*Pennsylvania, Troy. The Troy Knitting Co. informs us that they have discontinued making ladies' hosiery for this season, as they have a large stock on hand, running now on worsted and wool half hose. They will probably make ladies' hosiery another year.

—Pennsylvania, Wayne. It is reported that the Radnor Hosiery Mill is being removed to Winston, N. C., where it will be merged with a company in which J. Frazer Bard has an interest.

—Rhode Island, Pawtucket. The property and business of the Green Mountain Braiding Company has been sold to a new concern, recently organized with L. E. Allen, president; Charles E. Alden, secretary, and Charles W. Davis, treasurer. Company contemplates making a number of improvements to the plant.

—*Rhode Island, Pawtucket. The Green Mountain Braiding Company, which has been reorganized with Louis E. Alden, president; Charles W. Davis, treasurer, and Charles E. Alden, superintendent, has present equipment of 133 braiders, which they contemplate doubling in the near future.

—Rhode Island, Pawtucket. A recent report states that Austin Steere, of the Hope Webbing Company, is interested in forming a company to experiment with a new loom, which he has invented, for manufacturing narrow fabrics.

—Rhode Island, Waterford. The American Woolen Company, operating the Saranac Worsted Mills, are removing the dyeing machine to their Manton Mills, at Manton, R. I.

—South Carolina, Glenn Springs. It is reported that John K. Garnett is interested in the development of a mineral springs property near this place and that a cotton mill will also be erected. The cotton mill project was mentioned last year, although nothing definite was done regarding the matter.

—*South Carolina, Sumter. The project of establishing a knitting mill here by D. M. Blanding has been abandoned.

—Tennessee, Brownville. The Hatchie Manufacturing Company has recently been incorporated with capital stock of $12,000, by William W. Campbell, J. W. Bryan, C. E. Bruce, T. J. Carnathan and N. M. Byars. They propose operating a woolen mill.

—Tennessee, Maryville. McNutt Bros. & Cowan have bought the Maryville City Mills and after installing new machinery in same, will start operations as soon as possible.

—Tennessee, Rotherwood. It is reported that C. N. Jordan, proprietor of the Rotherwood Woolen Mills, will make some radical improvements in same.

—Texas, Sequin. A site has been purchased by J. T. Holmes and others with a view toward erecting a cotton mill, upon which they contemplate starting work at an early date.

—Virginia, Farmville. It is reported that the Farmville Knitting Mills have been leased to a Lynchburg concern.

—West Virginia, Charlestown. A recent advice states that there are several parties contemplating establishing a hosiery plant and that among the several locations in view, this place is under consideration. Nothing has yet been definitely decided upon.

—*Wisconsin, La Crosse. Work will be started at once on removing the plant of the Coley Carpet & Rug Company of Fountain City, to this place. Company has capital stock of $50,000.

PERSONAL RECORD.

Cotton.

—C. J. S. Austin has been engaged as overseer of weaving at the Loray Mills, Gastonia, N. C.

—William H. Buckley has been advanced to assistant manager of the Baltic Power Co.'s new mill in Baltic, Conn. This plant has all new modern machinery, and is on very fine counts. Mr. Buckley has just finished starting the card room in a very creditable manner, hence his promotion.

—C. Enos Bean, who went to the Millville Manufacturing Co., Millville, N. J., some months ago as overseer of carding, is now superintendent. This mill has recently been enlarged, another story having been built, and the spinning will be moved.

—Henry Black, of Union, S. C., has been engaged as boss spinner at the Cowpens Manufacturing Co.'s mills, Cowpens, S. C., in place of L. S. Gassett, resigned.

—W. T. Brown, superintendent of the Canton (Ga.) Cotton Mill, has been obliged to resign on account of ill health.

—Henry Cobb, who has been for some time past second-hand of the weaving department at the Lonsdale Company's No. 1 mill, Lonsdale, R. I., has accepted a position as overseer of the weaving department at the Grant Mill, Providence, R. I. His duties at the No. 1 mill ended with the recent closing of the same.

—Matthew L. Colven, for the past 28 years overseer in the sheeting and shirting gray-room at the lower bleachery in Saylesville, R. I., has retired from active business owing to ill health.

—Charles R. Chase, formerly assistant superintendent of the Millbury (Mass.) Cotton Mills, has accepted the position of overseer of finishing with the Lynchburg (Va.) Cotton Mill Company.

—J. E. Claridy, formerly employed at the Kincaid Mills, Griffin, Ga., has resigned to accept the position as superintendent of the Racoon Mill, Racoon, Ga.

—C. A. Dunn, for some time past superintendent of the Avon Mills, Gastonia, N. C., has been appointed superintendent of the Loray Mills, Gastonia, N. C.

—Louis Ellenberg has been appointed superintendent of the Knoxville Cotton Mill, Knoxville, Tenn.

—H. H. Edgerly, formerly of Biddeford, Me., is boss carder at the Libbey & Dingley Co.'s mills, Lewiston, Me.

—John Fallow has resigned as overseer of the beaming room with the Lorraine Manufacturing Company, Westerly, R. I., to accept a similar position with the Shetucket Company, Norwich, Conn. On the occasion of his leaving Mr. Fallow's employees presented him with a Morris chair and a gold watch, charm and chain.

—M. Flanagan, of Taunton, has accepted the position of boss spinner at the Hope Mills, Phenix, R. I.

—Maj. Nathan Gardner, who has been agent and paymaster at the Baltic Mills, Baltic, Conn., since August, 1865, has resigned.

—Alfred Hurst has been appointed overseer of the weaving department of the Lawrence Duck Company, Lawrence, Mass. He was formerly employed at the Pemberton Mills and later by the Methuen Company, Methuen, Mass.

—W. W. Hargraves, Egan, Ga., is now overseer of spinning and cone winding at the Elizabeth Cotton Mills, Atlanta, Ga.

—Harry P. Hewitt, overseer of the weave room at the Corr Mill, Taunton, Mass., has resigned and will take a position in the Acushnet Mills, New Bedford, Mass.

—E. N. Jones, of Valdosta, Ga., has taken charge of the weave room at the Fairchild Cotton Mills, Winnsboro, S. C.

—J. E. Kenny, for the past year boss weaver at the Shove Mills, Fall River, Mass., has resigned.

—C. J. Maguire, of Birmingham, Ala., has accepted the superintendency of the Tipton Cotton Mills, Covington, Tenn.

—C. H. May, boss carder for the Danielson Cotton Company, Danielson, Conn., for the past few months and formerly with the Dwight Manufacturing Company, Chicopee, has been appointed assistant superintendent of the Stevens Manufacturing Company, Fall River.

—Alexander Makepeace has recently engaged as superintendent of the Richard Borden Manufacturing Co., Fall River, Mass. He succeeds William Evans.

—Henry McGovern has accepted a position as boss doffer in the cotton department of the Arlington Mills, Lawrence, Mass.

—T. Nelson, instructor in the weaving department of the Lowell Textile School, Lowell, Mass., has resigned his position to accept the position of instructor of weaving and designing in the textile department of the College of Agriculture and Mechanic Arts, Raleigh, N. C.

—Edward O'Hearn has resigned as overseer of the weaving department of the Slade Mills, Fall River, Mass., to accept a similar position at the Shove Mills in the same city.

—Paul Parks, of Concord, N. C., has accepted the superintendency of the Arlington Mills, Gastonia, N. C.

—J. H. Staples, who for the past 12 years has been overseer of dressing, slashing and spooling at the Lyman Mills, Holyoke, Mass., has resigned to take charge of the dressing, slashing and winding department at the mill of the Libbey & Dingley Co., Lewiston, Me.

—J. E. You has resigned his position at Dalton, Ga., to become boss carder at the Opelika Coton Mills, Opelika, Ala.

—James Wood, who has had charge of the carding room at the Boston Manufacturing Co.'s mill, Waltham, Mass., has severed his connection with that concern, as he has accepted another position with one of the Rhode Island mills. The employees at the Boston Mfg. Co. presented him with a handsome quartered oak roll-top desk, as a token of their appreciation and friendship.

—E. C. Willey, agent of the Atlantic Cotton Mills, Lawrence, Mass., has resigned. His successor is W. H. Summersby, superintendent of the Knight Mills, Pontiac, R. I.

Woolen.

—Charles Ames has severed his connections with the Beoli Mills, Fitchburg, Mass., to become designer at the Puritan Mills, Plymouth.

—Stephen N. Burgess, Hope Valley, R. I., is now with the Wickford Worsted Mills, Wickford, R. I., as designer.

—John W. Bentley, formerly with the Chautauqua Worsted Mills, Jamestown, N. Y., has taken the superintendency of Pitkin, Holdesworth & Co.'s mills in New York City, known as the Manhattan Worsted Mills.

—E. L. Berrin, formerly boss carder and spinner at the Reynolds Mills, Monson, Mass., has accepted a similar position at the Hargraves Woolen Mills, West Buxton, Me.

—Fred Brown, late of Buxton, Me., is now boss weaver for the Rochester Manufacturing Co., Rochester, N. H.

—John Campbell recently resigned his position as overser of the weaving department of Fred L. Sayles Co.'s mill at Pascoag, R. I., and is now connected with Campbell & Heneault, Woonsocket, R. I.

—E. A. Churchill has resigned as overseer of weaving for the Yount Woolen Co., Yountsville, Ind., and will take charge of the designing and weaving for the New Western Woolen Co., Topeka, Kan.

—Frank E. Carson, overseer of finishing at the mill of the Success Worsted Company, North Chelmsford, Mass., has resigned, and will locate in Providence, R. I.

—J. H. Creaser, formerly of Lawrence, is boss dyer at the Franklin Mills, Franklin Falls, N. H.

—Thomas Bowler is dresser tender at the Fulton Woolen Mills, Fulton, N. Y.

—James Cocroft of Blackstone, Mass., has begun work in the Stirling Worsted Mills, Clinton, as boss dyer.

—Wilbur Corson has resigned as boss finisher at the Hampden Woolen Co., Hampden, Mass.

—T. D. Douglass of Lawrence has been engaged as boss weaver at the Dustin Island Woolen Mills, Penacook, N. H.

—W. C. Dow of West Buxton, Me., has been engaged as boss dyer by the Rochester Mfg. Co., Rochester, N. H.

—W. E. Dearborn, formerly boss dresser at Hartland, Me., is the new boss dresser at the Kennebec Worsted Mills, of Fairfield, Me.

—T. H. Dunlevy is superintendent of the Northern Ohio Blanket Mills, Cleveland, O., and C. T. Dunlevy, his brother, is his assistant.

—H. E. Glidden succeeds Joseph Fitzgerald as boss carder at the Wm. Harvey & Sons' shoddy mill of Gardiner, Me.

—J. Garney has resigned as overseer of spinning at the Perry Mill, Webster, Mass.

—James Heyward is now boss finisher at the Lawrence Dye Works, Lawrence, Mass. He was formerly employed by the Quaker City Dye Works at Philadelphia, Pa.

—E. S. Jones is boss finisher at the mills of Joseph Foster & Sons, Philadelphia, Pa.

—Frank C. Jacobs has resigned from the Charles River Woolen Company, Franklin, Mass., and is succeeded by Cornelius F. Fitzgerald of the Hayward Mills, Franklin.

—Frank Judson is the new overseer of finishing in Robert Bleakie's Mill, Hyde Park, Mass. He was formerly in the Amidon Mill, Wilton, N. H.

—George A. Judson, until lately overseer in the mills of Robert Bleakie, Hyde Park, Mass., has accepted the position of boss finisher at the Collingwood Mills of Folwell Brothers & Co., Third and Cambria Sts., Philadelphia, Pa.

—William Lee, Stafford Springs, Conn., has accepted the position of superintendent of the Ayreshire Woolen Mills, Skaneateles Falls, N. Y.

—James Lapraik of Hyde Park has accepted the position of boss dyer at the Somerville Woolen Mills, Somerville, N. J.

—James Morrison, overseer of th No. 3 filling and spinning department of the Hartford Carpet Corporation, Thompsonville, Conn., has tendered his resignation. Mr. Morrison has been connected with the spinning and carding of yarns since boyhood, forty-one years of which time have been given to the service of the Hartford Carpet Corporation. Mr. Morrison's brother, Charles F., for the past twenty-two years overseer of No. 4 filling and spinning department of the same company, has also tendered his resignation.

—J. R. McFarlin, formerly of the Waverly Woolen Co., Pittsfield, Me., is the new dyer at the Riverview Worsted Mill, Waterville, Me.

—Joseph Mallison, who has been secondhand in the dye room of the Carolina Mills, Carolina, R. I., the past few years, has accepted a position as overseer in the Saco River Woolen Mill, West Buxton, Me. Walter Hamilton of Pascoag, R. I., has taken his place at the Carolina Mills.

—Mr. Martin of Leominster, Mass., has been engaged by F. S. Mackenzie, Woodstock, Vt., as boss weaver.

—Alexander McHendrick is overseer of the finishing department at night for the Moosup Woolen Mills, Moosup, Conn.

—James McGee, formerly employed at Fitchburg, has been engaged as boss dresser at the Cowan Woolen Mill, Lewiston, Me.

—Charles R. Newton of Stafford Springs, Conn., has accepted the position of assistant superintendent of the Hawthorne Mills of the American Felt Company, at Glenville, Conn.

—William Phinney is the new dresser tender at the Pondicherry Woolen Mill, Bridgton, Me.

—T. Z. Rigney is now boss finisher for the Auburn Woolen Company, Auburn, N. Y.

—William Robertson, until recently with the Philadelphia Wool Refining Co., Philadelphia, Pa., has accepted a position at the Mascher Street Dye Works, in that city.

—Philip Ripley of North Andover has been engaged as chemist at the American Woolen Co.'s mill in Maynard, Mass.

—Herbert Rawnsley, overseer of drawing in the Collingwood Mills of Philadelphia, has resigned and gone to Louisville, Ky., to take charge of the Hope Worsted Mill there.

—J. A. Ring has been overseer of finishing at the Wilton Woolen Co., Wilton, N. H., for the past few months.

—D. W. Sutcliffe succeeds Benjamin Horsfall at dyer at the Robinson Woolen Mill, South Windham, Me.

—James Staples, formerly of the Cascade Woolen Mills of Oakland, Me., has recently been engaged as boss burler and mender at the North Vassalboro (Me.), Woolen Mill.

—Thomas Sheehy has been engaged as boss spinner by the Beckman Company, Cleveland, Ohio.

—J. W. Steelcrook, formerly boss finisher at the Peterboro Woolen Mills, Peterboro, Ont., is now acting in a similar position at the Marysville Woolen Mills, Marysville, Cal.

—Joseph Shackleton has retired from the management of the worsted yarn department of James Roy & Co., West Troy, N. Y., to embark in the mill supply business.

—William Schultz, formerly boss finisher for the Worumbo Manufacturing Company, Lisbon Falls, Me., is now acting in a similar capacity at the Robinson Woolen Mill, South Windham, Me.

—Richard Sharp has been appointed overseer in the finishing department of the Saxonville Mill, Saxonville, Mass., to succeed Thomas Quigley, who has accepted a similar position in a mill in Canada.

—Theodore St. George is now in the employ of the Waverly Woolen Co., Pittsfield, Me., in charge of their carding department.

—Alexander Trotter is now in charge of the weave room at the Yountsville Woolen Co.'s mill, Yountsville Ind.

—Samuel Waterbury of New York has taken charge of the Rotherwood (Tenn.), Woolen Mills.

—Edward Woodward of Worcester is the new boss weaver at the Puritan Mills, Plymouth, Mass., in place of Mr. Groube, resigned.

—Charles Ward, overseer of the weaving department at the shoddy and extract mill of O. & E. G. Morrison, Tilton, N. H., has severed his connection with that concern.

—John Wheeler, overseer of carding for the Pequea Mills, Twenty-second and Spring Garden Streets, Philadelphia, Pa., resigned recently to accept a similar position in a western woolen mill.

Knit.

—At the Mark Mfg. Co., Herkimer, N. Y., are the following overseers: Sanford Stewart, carder; Mr. Fogarty, spinner; Walter Senior, knitter, and H. Schultz, dyer.

—C. P. Buschmann is the chief engineer, millwright and electrician at the Gloversville Knitting Co., Gloversville, N. Y.

—Henry Bradley, formerly night foreman at the plant of the Perry (N. Y.) Knitting Company, has accepted a similar position at Schenectady, N. Y.

—E. A. Brown, formerly superintendent of the Danville (Va.) Knitting Mills, and who later started the Tifton (Ga.) Knitting Mills, has retired from mill business, having purchased a farm in Vermont.

—J. C. Boyett of Newport News, Va., has been appointed superintendent of the Leon A. Vaughn Knitting Mill at Winston, N. C.

—John C. Calhoun has resigned as overseer of carding for the Garfield (N. J.) Woolen Co., to accept the position of carder in the knitting mills of Robert Mackinnon, Little Falls, N. Y.

—Charles Crocker has been engaged as boss spinner at the Colchis Mill, Woonsocket, R. I., in place of Joseph Auclair, resigned.

—Sam Driver has resigned as overseer of carding and spinning of the Gloversville Knitting Co., Gloversville, N. Y., and Bert Dibble, secondhand, has taken charge.

—Harry Fraser is the successor of W. Dwight Lowther, bookkeeper at the Continental Knitting Mill, Cohoes, N. Y.

—F. H. Hyde has resigned as superintendent of the Campbell Knitting Mill, Elmira, N. Y.

—J. A. Key has been made spinner and David A. Dinkins overseer of carding at the Union Point, Ga., knitting mills.

—Evan Lewis, formerly boss carder for the Atlas Mfg. Co., of Amsterdam, N. Y., resigned to take a similar position with the Waterloo Woolen Co., Waterloo, N. Y.

—J. W. Marville of Boston, Mass., will be superintendent of the Bowling Green Knitting Mills, Bowling Green, S. C.

—Isaac Onion has succeeded Henry Fryer as foreman in the knitting mill at Plainville, Conn.

—Thomas S. Ritchie has been engaged as boss carder for the Atas Mfg. Co., Amsterdam, N. Y.

—R. M. Smith, recently superintendent of the Farmville Knitting Mills Co., Farmville, Va., is now traveling for the E. Jenckes Mfg. Co.

—Charles Sanderson, of Elmira, has succeeded C. R. Ostrom as boss knitter in the Superior Knitting Mills, Hoosick Falls, N. Y.

Deaths.

—The sudden death of F. J. Andres, of Cambridge, Mass., was announced last month by cable and came as a shock to his many friends and business acquaintances. He died of pneumonia at Carlsbad. He was one of the pioneers of the Egyptian and Peruvian cotton importing business in this country. He was traveling through Germany and Austria with his wife and daughter, and contemplated a visit to the cotton growing district of Egypt. Mr. Andres was born in Kiren, Germany, in 1839. He was a resident of Cambridge, and had his office in the John Hancock Building, Boston.

—Ephraim Morris, president of the Hartford (Vt.) Woolen Company, and treasurer and managing director of the Ottaquechee Woolen Company, North Hartland, Vt., died recently. The deceased was born in Strafford, Vt., May 11, 1832. He entered business life in 1854, when he became a partner with his father in the manufacture of chairs for shipping. In 1874 he secured a controlling interest in the Ottaqueechee Woolen Company and has since been its treasurer and managing director. Later, together with his brother, he organized the Hartford Woolen Company, of which he became president. Mr. Morris was vice-president of the National Bank of White River Junction. He founded a free library and reading room at a cost of $10,000. He also gave largely to Smith College, and one of its dormitories bears the name of "Morris House." He had a large number of friends among the trade and was much respected as a man of absolute integrity and unusual business ability.

—George W. Birge of L. N. Birge Sons' Company, Bristol, Conn., died late last month. He was born in Bristol in 1870. He attended the public schools in that place and also a Hartford business college. In 1893 he was admitted to partnership in the firm of N. L. Birge & Son, large manufacturers of underclothing, founded by his father, N. L. Birge. He continued in the partnership until his father's death, when the business was changed to a company known as the N. L. Birge Sons' Company, and Mr. Birge was made secretary and treasurer. A wife and daughter about two years of age survive him.

—Charles A. Busial, ex-governor of New Hampshire, died at his home in Laconia, N. H., recently. He was born in Meredith Village in 1842, but came to Laconia when but four years old, where he was educated and learned the business of manufacturing hosiery in his father's mill. When quite young he went into business for himself. His original factory employing only 100 hands, grew to a large industry, giving employment to over 2000. Mr. Busial was also prominently identified with railroad interests.

—William Leiper, one of the best-known men in the cotton yarn trade, died on September 13. Mr. Leiper was born in Chester, Pa., nearly fifty years ago, and has for nearly twenty years been closely associated with the cotton interests of Philadelphia. For the past two years he was salesman for R. A. Blythe. He was an active member of the Masonic bodies and of the Elks.

—Francis Whalen White of Summit, N. J., died last month in his sixtieth year. Mr. White was a member of the firm of Whitman & Phelps, dry goods commission merchants in New York City. He was born in Massachusetts in 1835, and for some years engaged in manufacturing in that state, though during the last thirty years he had been engaged in New York in the dry goods commission business.

—James Freeman Brown, president of the dry goods firm of James Freeman Brown Company, and treasurer of the Manufacturers' Commercial Company, died suddenly of heart disease last month at Monmouth Beach, N. J., while bathing in a heavy surf. Mr. Brown was born in Wellesley, Mass., in 1852. He began his mercantile career with the Boston jobbing house of Lewis Brown & Co., of which his father was a partner. In 1887 he became connected with J. H. Lane & Co., for the last six years of his association with the house being a partner and Boston representative. In 1889 he organized the James Freeman Brown Company.

—Hon. George A. Nickerson, president of the Arlington Mills Corporation of Lawrence, Mass., and a prominent resident of Dedham, died at his home September 2. Though he inherited large wealth, Mr. Nickerson became an active man of business after his graduation from Harvard College, and since then has occupied many prominent positions of trust. At the time of his death he was a director of the Atchison, Topeka & Santa Fe Railroad, the Dedham Water Co. and the Dedham Electric Light Co., as well as being president of the Arlington Mills Corporation. He leaves a widow, one son and two daughters.

—Lafayette Godfrey died at his home in Providence, R. I., last month, at the age of seventy-six years. The deceased was manager of the Providence Textile Machinery Agency, and he was well versed on the subject of cotton manufacture. He came to Providence a number of years ago, prior to which time he was a well-known manufacturer in Hope Valley, R. I. He had also been interested in cotton manufactories in Barrowsville, Mass., and Central Village, Conn. He leaves a widow and one son.

—John C. Bosworth, who for nearly two score of years was connected with the woolen industry of Providence, R. I., died at his summer residence in Warwick Neck, recently, aged 53 years. He was senior member of the firm of Bosworth Bros., of which Frederick S. is junior partner. Besides two brothers, he leaves a widow and two sons.

QUESTIONS AND ANSWERS

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Speed of Mule and Ring Frame Spindles.

Editor Textile World:

How does the speed of the mule spindle compare with that of the ring frame spindle for spinning cotton yarn?

Speed (149).

We understand that in Europe the speed of the mule spindle is generally higher than that of the ring frame spindle. In this country, however, not much difference will be found between them. We have submitted this question to a number of cotton spinners, and received the following replies, which will undoubtedly interest our enquirer and our readers generally.

In this country the ring frame spindle is generally run the faster. As a general rule mule spindles do not run over 9700 revolutions, while the ring frame spindles are speeded up as high as 10,000 per minute.

The speed of the ring frame spindle will average higher on low and medium counts than that of the mule spindle. On fine yarn, however, the mule spindle goes ahead of the frame spindle in speed as well as quality of yarn produced. The superiority of the yarn produced on the mule applies equally well to the medium and low counts. Take for instance a first-class mule spinning 100's. The spindle may run at 12,000 revolutions per minute with a long stapled cotton. We conclude the square root of yarn No. multiplied by 275 will give twist enough. With a 64-inch stretch we have $10 \times 275 \times 64 = 1760$ revolutions of the spindle per stretch. It takes four seconds to back off and wind on each stretch; $12,000 \div$ by $60 = 200$ revolutions of spindle per second; $200 \times 4 = 800 + 1760 = 2560$ revolutions per stretch; $1760 \div 64 = 40$ revolutions per spindle per inch of yarn; $12,000 \div 40 = 300$ inches of yarn per minute. Now take the ring frame spindle running 10,000 revolutions per minute, considering the average cotton used on the ring frame the square root of the number multiplied by 3½ will give about the right twist, so we have $10 \times 3½ = 35$ revolutions of spindle per inch of yarn Then we have $10,000 \div 35 = 285$ inches of yarn per minute. Some manufacturers in their anxiety to make the ring frame keep up if not exceed the production of the mule put less twist in the yarn, but the result is not satisfactory, as the work always runs badly in the loom, besides making imperfect goods.

Twelve years ago I saw a spindle at the Mason Machine Shop, Taunton, Mass., with a large hosiery cop, running without vibration at 13,000 revolutions per minute. Thirty-four years ago mule spindles were run 10,000 revolutions per minute in Preston, Lancashire, England. By the method of figuring which I have just used, the superiority of the mule on fine counts may be easily calculated, also the increased production of the ring frame on medium and low counts.

Speaking generally I should say that there is not a great difference in the speeds of spindles on ring frames and mules. If anything, mule spindles are run faster than those in frames. It is not at all uncommon to run modern mule spindles at the rate of over eleven thousand revolutions per minute on such classes of work where it is possible and advisable, and I have very seldom seen frame spindles running much over ten thousand revolutions per minute, although I heard several years ago that a Woonsocket, R. I. mill was running a part of their frames at more than twelve thousand.

Warp Stop Motion.

Editor Textile World:

Can you refer me to anything bearing on the history and development of the warp stop motion?

Warp (154).

There is no literature on this subject to our knowledge, except what is contained in the circulars and catalogues of the different firms who have put warp stop motions on the market. The indexes of the Patent Office Gazette will give you the names and numbers of the patents granted for stop motions of which there are many, and will be the best guide to the ground that has been covered, and the development of this device.

Directory of Fine English Spinners.

Editor Textile World:

Can you inform us where we can procure a list of English spinners of fine counts?

Fine Counts. (166).

The Cotton Spinners & Manufacturers Directory of Lancashire, published by John Worrall, contains this information, besides a complete directory of all the cotton spinners in Lancashire, there is a classified index of fine, coarse and medium count spinners, somewhat similar to the Textile World's Yarn Index. The cost of this directory is $2.50 in this country. We can procure it for you.

Treasurers' Salaries.

Editor Textile World:

In fixing the salaries of the officials of a cotton mill, is there any basis by which the salary should be regulated in proportion to the size of the plant? Of course I understand that there is no rule in such matters, but possibly you have some facts from which to determine some average figures.

T. S. (167).

In our opinion, salaries for officials in cotton mills should be fixed not so much by the size of the mill as by the size of the man. Of course, there are limits beyond which a small mill could not go, but it is the personal equation, rather than the mill, which determines the value of the treasurer or manager. If X at a salary of $5000 a year can earn larger dividends for the stockholders than Y at $2500, a year, he is the cheaper man, regardless of the size of the mill. The only figures that occur to us are some published several years ago, giving a list of salaries paid to Fall River mill treasurers at a time when an agitation of a reduction of wages was proposed. From this list it appeared that 35 treasurers of cotton mills in Fall River received salaries aggregating $224,000, or an average of $6400 to each treasurer. These salaries ranged from $2500 for a 20,000 spindle mill to $20,000 for a 225,000 spindle mill. The mills represented in this list had at that time in the aggregate about 2,860,000 spindles, which made the salary rate $1 for every 12½ spindles. These figures, of course, have no direct bearing on the question, because so much depends upon the duties and responsibilities of a man, and again salaries do not increase proportionately with the size of a plant. While $2500 might be a fair salary for the treasurer of a 5,000 spindle mill, $50,000 would certainly be an extremely large salary for the treasurer of a 100,000 spindle mill.

Knitting School.

Editor Textile World:

Is there any textile school in this country where the knitting branch of the industry is taught? Have such schools been successful abroad?

C. K. S. (169).

We believe none of the textile schools in this country have as yet any special department devoted to knitting. In the Philadelphia Textile School there are, we believe, a few knitting machines, but no special department devoted to knitting. It has always seemed to us as if there was an opportunity for technical instructions in this department, especially since there appears to be a gradual increase in the use of full fashioned knitting machinery, which involves more complicated machinery and a special knowledge of designing for fancy work. One of the most serious handicaps to the use of full fashioned machinery in this country has been the scarcity of trained operatives. In Chemnitz there is a very prosperous institution, which had its origin in the desire to train native skilled help, to be independent of English overseers and designers. At one time German fancy knitting mills employed English overseers quite largely. Now this school and one or two others are able to supply the demand for this class of help. Besides the standard underwear and hosiery, students are given practical instructions in making all sorts of fancy knit goods, such as hoods, shawls, gloves, jackets, etc., and taught how to fix the machines and also take care of finishing and sewing machinery.

Holes in Knit Underwear Fabric.

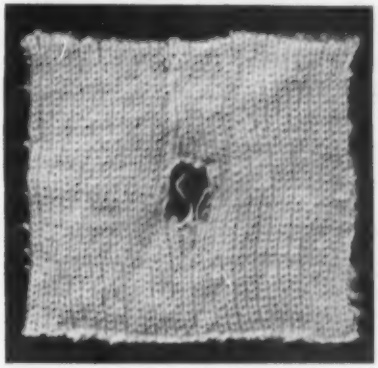
Editor Textile World:

I am having trouble with my machines making holes in cloth. I enclose samples. Can you tell me what causes the trouble? The machines are —— make, 15 inch to 22 inch, 30 gauge needles, 10 to the inch, speed about 34 to 40 per minute for 18-inch. The yarn is carded peeler No. 18s. I hardly think the trouble is due to bad needles, as that point has been carefully followed up. I have no trouble with 18-inch gauge needles, eight to the inch, on No. 8 yarn.

Wis. (170).

It is impossible to give a correct reply to this question without examining the machines. There are so many reasons which cause machines to make holes. In this particular case, we venture to suggest that a very probable reason is that

the yarn is too fine for a machine of the gauge you mention; viz., a No. 18 yarn for a machine cut 10 needles to the inch. There is a limit to the size of yarn which machines of different gauges will handle successfully, and when the limit is over run either on the fine or coarse side, it will cause trouble, and in this case it seems to us you have certainly approached the limit on the fine side. There may be other causes in connection with this, which could only be determined by



careful examination of the machine. There may be rough needles, or it may be that the edge of the dial grooves are rough, or it may be that the needles draw too close together. It is evidently a cut, and not a skip. The yarn is not a very high quality. A knitter to whom we have shown this sample suggests that very probably the dial cap is not set properly. In an article in the Knitting Department this point is covered at greater length.

Camel Hair Noils.

Editor Textile World:

Kindly advise us of some reliable firms that will handle our camel hair noils and waste and pay us the market price. We want to deal with some house that will always pay us a fair market price for such material. We are frequently in receipt of offers much under the market price and our product of noils and waste is of exceptionally good grade and is carefully packed in new burlaps ready for shipment.

Camel (165).

This stock is used only for special lines of goods, and today there is very little demand for it, so that the prices offered are more with the view of future speculative value than for its intrinsic worth when it is in demand. We have sent you the names of parties from whom we believe you will get fair treatment.

Nappers Driven by Gears.

Editor Textile World:

Are there any nappers built in the United States that have the rollers driven by gears instead of belts?

Napper (155).

Answered by mail.

Cheese Cloth.

Editor Textile World:

Please give me the address of some mill making cheese cloth and selling their goods direct.

Sea Foam (157).

Answered by mail.

Glazed and Polished Yarns.

Editor Textile World:

Can you inform me of any cotton or thread mills in the South manufacturing glazed or polished yarns?

Lustre (160).

Answered by mail.

Book on Finishing.

Editor Textile World:

Do you know of a book treating of the finishing of worsted filled cotton warp lining serges?

Loffel (171).

There is no work in English treating of this subject. We expect to publish in an early issue of the Textile World, an article on the finishing of these goods.

A Foreign Agent.

Editor Textile World:

Where can we secure the addresses of manufacturers of chintzes, velvets, embroideries, tapestries, etc.? We desire to secure concerns for which we will act as London agents.

London (159).

A list of all the textile manufacturers in the United States will be found in the Textile World's Directory. Full particulars are given in regard to location, class of goods manufactured, size of plant, method of selling goods, etc.

We would be pleased to put any one especially interested in this enquiry in direct communication with our correspondent.

Number of Mule and Frame Spindles in the United States.

Editor Textile World:

Where can I obtain the number of mule and frame spindles in the United States?

Mule Ring Spindle (156).

We do not know of any statistics giving the number of mule and frame spindles separately for this country and England. It has been estimated that two-thirds of

the spindles in this country are on spinning frames, the balance being mule spindles. In the July issue of the Textile World, page 51, we published a diagram showing at a glance the relative number of cotton spindles in the different states.

New Publications.

The Chemical Manipulation of Wool, by Victor Jocket. A. Hartleben, Wien, Austria. Ills. Price $2.50.

We have received a copy of the second edition of this work which has proved so popular on the continent of Europe. The following abstract from table of contents will give an idea of the scope of the work, which is very carefully compiled and which will undoubtedly prove valuable to all interested in the manipulation of wool: 1, Material, Mordants and Dyes; 2, Dyestuffs in Neutral Baths; 3, Dyestuffs in Weak Acid Baths; 4, Dyestuffs in Acid Baths; 5, Mordant Dyes; 6, Indigo and the Indigo Vat; 7, The Scouring of Wool, Yarn and Pieces; 8, Carbonizing Wool; 9, Bleaching Wool; 10, The Handling of Wool in Dyeing; 11, Handling Pieces in the Dyehouse; 12, Logwood Black; 13, Tests for the Fastness of Wool Colors.

This useful book is in German and can be imported through our office.

Drying by Means of Air and Steam, by E. Hausbrand. Translated from the German. Price $2.

We have received a copy of this work, which is written with the usual German accuracy and thoroughness. The following abstract of the table of contents will give our readers an idea of its scope: Comparison between Fahrenheit and Centigrade thermometers; Calculation of the maximum weight of saturated aqueous vapor which can be contained in 1 kilo. of air at different pressures and temperatures; The necessary weight and volume of air, with the least expenditure of heat for drying at the atmospheric pressure; Drying at a temperature higher than that of the surrounding atmosphere; Drying by means of superheated steam without air. The work contains several diagrams, illustrating the tables, and makes a convenient and valuable handbook of a subject which should be understood by every manufacturer.

A Treatise on Fixing Silk Looms, by J. Loir. ills; 2 vols.; illus.; price, $3.50.

This work, recently published, treats of the fixing of silk looms. It begins with brief general directions to fixers, and then takes up the separate parts of the loom, explaining their action and the methods of adjustment. The illustrations are very complete and the work makes a valuable handbook for silk loom fixers. It is written in French and can be imported through our office.

Calculation Weight of Chains. The Draper Co., Hopedale, Mass.

The Draper Company give an example of their enterprise by distributing a card showing a short method of calculating the weight of chains composed of different sizes of yarn. This method consists in the use of constant numbers, which have been used by John S. Adams, Jr., of Adams, Mass., and to whom the Draper Company are indebted for the table.

Business Literature.

Mechanical Rubber Goods. Boston Belting Co. We have received a copy of a very attractive catalogue issued by the Boston Belting Co., which describes and illustrates their extensive line of goods. It is so complete that any attempt at a detailed description here would fail to do it justice, and we advise all manufacturers to secure a copy of the book, as it will give them a ready means of referring to goods of which they have frequent need. This catalogue is rather too expensive for general distribution, but the publishers would be pleased to send a copy to anyone who is really interested in mechanical rubber goods.

Improved Drawing Frame. Saco & Pettee Machine Shops, Newton Upper Falls, Mass. This catalogue is devoted to the improved drawing frame built by the Saco & Pettee Co. Detailed description is given, which is accompanied by fine illustrations of their machine and its parts. Production tables are also included.

Improved Railway Head. Saco & Pettee Machine Shops, Newton Upper Falls, Mass. In this catalogue is described and illustrated the improved railway head built by the Saco & Pettee Co. In addition to the reading matter and illustrations, production tables are given.

Electric Locomotives. The Jeffrey Mfg. Co., Columbus, O. This attractive circular illustrates the various types of electric locomotives built by the Jeffrey Mfg. Co. Tables are given, showing the dimensions and power of the various motors.

Bulletin of the National Association of Wool Manufacturers, September, 1901, Boston, Mass. This issue contains a portrait and obituary of Mr. Joseph Sawyer. The first article is based upon a recent book published by William L. Black of Texas, on the Angora Goat. Then follows the continued article entitled, "New England Wool Manufacture;" the present instalment is very interesting, giving, as it does, not only a history of the various improvements in woolen machinery, but also illustrations of the old styles of cards, spinning machinery and looms used in the early part of the last century.

Steam Hot Blast Apparatus. The B. F. Sturtevant Co. A catalouge, describing and illustrating the various types of steam hot blast apparatus built by the B. F. Sturtevant Company, contains many useful tables bearing upon the subject.

The American Angora Goat Breeders' Association, Kansas City, Mo. We have received a copy of the circular issued by this association, giving the rules of the sale of angoras to be held at Kansas City on October 17th to 21st.

New Dye Cards Recently Received.

Pluto Black F extra. Farbenfabriken. This card shows a sample of cotton goods colored black with Pluto Black F extra, a new homogeneous color of their Pluto

Black series, the concentration of which is stated as being twice as strong as that of the ordinary brands.

Fashionable Shades on cotton cloth. Farbenfabriken. This card shows 180 very attractive shades on cotton cloth. Full directions for dyeing accompany the same, and the collection cannot fail to be very useful to dyers and manufacturers generally.

Wool Card No. 1. Read, Holliday & Sons, New York. This card shows six samples of worsted yarn colored red and blue with vat red powder and XL Blue R R.

Wool Black 6 B W and 4 B W. Berlin Aniline Works, New York. This card shows two samples of worsted goods, striped with white cotton and colored with Wool Black 6 B W and 4 B W. The worsted takes a deep, rich black, and the cotton is left white.

Zambesi Pure Blue 4 B. Berlin Aniline Works, New York. This card shows samples of bleached and unbleached yarn and cloth, dyed with Zambesi Pure Blue 4 B and developed with Beta-Naphtol. Zambesi Pure Blue 4 B is a new substantive cotton dye which has just been brought out.

Wool Blue 5 B. Berlin Aniline Works, New York. This card shows samples of all wool and half wool goods, dyed with Wool Blue 5 B. The shades are very pure and possess the same property and fastness as the brands 2 B and R, which have been in use for some time, but yield greener and somewhat clearer shades.

Diphene Blue B and R Base. Berlin Aniline Works, New York. This card shows samples of cotton yarn, colored with Diphene Blue B and R. Full directions are given for handling the goods.

Sulfur Black 2 B extra. Berlin Aniline Works, New York. This card shows a sample of cotton yarn dyed black with Sulfur Black 2 B extra. This dye yields a more greenish blue black, and thus supplements the T extra brand, intended for deep blacks.

Immedial Sky Blue. William J. Matheson & Co., New York. This card shows four samples of cotton yarn colored with Immedial Sky Blue. Two of them are direct dyeings, one with five and the other with ten per cent. of dyestuff. The other two are colored with five and ten per cent. of dyestuff respectively, and afterwards treated with a bath containing bichromate of potash, sulphate of copper and acetic acid. Full directions are given for handling the material.

Diamine Brilliant Scarlet S. Wm. J. Matheson & Co., Ltd., New York. This card shows 14 samples of cotton yarn, both mercerized and unmercerized, raw cotton and piece goods, dyed with Diamine Brilliant Scarlet S.

Benzo Copper Blue B. Farbenfabriken, New York. This card shows six samples of cotton yarn and cotton and piece goods dyed with Benzo Copper Blue B in various proportions.

Pluto Black C R. Farbenfabriken, New York. This card shows dyeings with Pluto Black C R on loose cotton, cotton yarn and piece goods, half wool piece goods and half silk cloth. Full directions are given for dyeing same.

Diazo Fast Black B H X. Farbenfabriken, New York. A card showing dyeings with Diazo Fast Black B H X on cotton yarn and piece goods dyed direct and also developed.

Katigen Blue Black R and B. Farbenfabriken, New York. This card shows eight samples of cotton yarn dyed black with Katigen Blue Black R and B, mercerized and unmercerized.

Benzidine Colors. Farbenfabriken, New York. This elaborate supplement to the pamphlet Benzidine Colors should be in the hands of every dyer and printer in the country. It makes a volume of over one hundred pages, the greater portion of which is occupied by numerous beautiful samples, both dyed and printed. Illustrations of the machines used in the process of dyeing are given and full directions for producing the colors shown. It makes a very useful handbook for the dyer and printer.

Union Mixtures. William J. Matheson & Co., Ltd., New York. On this card are dispayed 24 mixtures, consisting of white cotton blended with brown, blue, black, olive and other colors on wool. The goods are piece dyed, and are very interesting examples of what can be done in the way of mixed effects in piece dyed goods. Full directions are given for dyeing.

Diamine Catechine 3 G. Wm. J. Matheson & Co., Ltd., New York. This card shows samples of cotton yarn, loose cotton and cotton linings dyed with Diamine Catechine 3 G. Formulae accompany them.

Conditions in Lowell Mills.

Editor Textile World:

Although Lowell is a little sleepy at present, this condition is only temporary, and the manufacturers here are preparing for a brisk business in the future, as is shown by the new machinery, which is being installed in various mills here.

General regret is expressed at the retirement of Mr. Thomas from the agency of the Tremont and Suffolk Mills as he was an up-to-date manufacturer, and much interested in assisting young men to fit themselves for higher positions.

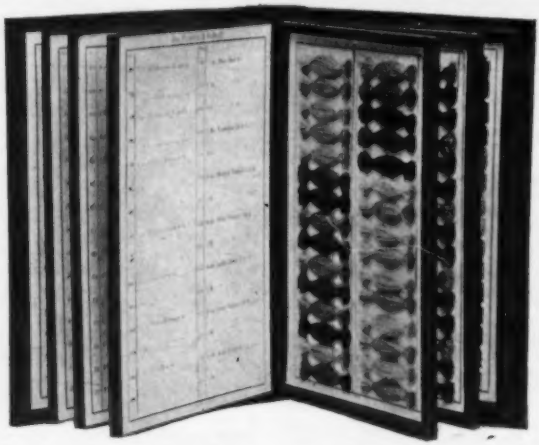
Lowell is particularly fortunate in the good feeling existing between the help and the officers of the corporations. All hands pull together, and most of the overseers are capable of settling the daily troubles of room management without carrying them to the office.

Many of the overseers in Lowell have occupied their positions from twenty-five to forty years. We have men here in charge of departments in the mill who succeeded their fathers in the same positions, and who are up-to-date manufacturers. This condition of affairs does much to make Lowell what it is as a manufacturing centre.

Operative.

Care of Mill Samples.

There is scarcely a department in the textile mill which does not require some method of filing samples for reference, and the extent to which mills at the present time sell their own mills, makes it necessary for them to purchase large quantities of boxes and cards with which to show their samples. The Merchants Sample Card Co., of 33 and 35 Sullivan St., New York, make a specialty of sample books, color cards, etc. Our illustrations show one of their color books made for alizarine dyes and an album for samples of clothing.



They are not confined to any regular line of samples, but are equipped to manufacture any goods in their line which may be required by the trade.

They have acquired an enviable reputation, and would be pleased to have interested parties correspond with them in regard to any work which they may desire.

—The American Blower Co., of Detroit, is doing a very extensive business in the line of mechanical draft. Among other large orders recently received are those from the New Amsterdam Gas Co., Ravenswood, L. I., and the Wilkes Barre (Pa.) Heat, Light & Motor Co. Each of these outfits embraces two 180 inch steel plate fans with suitable direct connected engines. Catalogue No. 118 issued by this company deals with the subject of mechanical draft in a very comprehensive manner.

Large Importation of Machinery.

The steamer Ultonia on her last trip to this side carried 335 cases of textile machinery from John Hetherington and Sons, consigned to their American agent, S. C. Lowe, Boston, Mass. This machinery is for mills in North Adams, Fall River, Lowell and Warren.

Boston Food Fair.

A great variety of attractions are offered at the Food Fair in the Mechanics' Building, Boston. Concerts are given every afternoon and evening. Among the other features may be mentioned the Domestic Science Department, where practical instruction in cooking is given, also the large number of free samples given away by the exhibitors.

Sulphur Colors on Cotton Yarn, Sykes & Street, New York.

We have received an attractive sample card from Sykes & Street, on which are shown 154 samples of cotton yarn dyed with sulphur colors, of which this firm handle a large quantity. In the introduction to this sample card are general notes on the characteristics of these colors, including, The Thiocatechines, The Cachou De Lavais, St. Denis Blacks, Autogene Black, etc. On the last page of the card are 22 samples of mercerized yarn dyed with the same colors. Detailed instructions are given for coloring each of the numerous shades which vary from a light stain to black. This card will prove to be a useful adjunct to the dyers' office.

—The Howard & Bullough American Machine Co., Pawtucket, R. I., report the following orders recently received: Osborn Mills, Fall River, Mass., a repeat order for electric stop motion drawing; Standard Cotton Mills, Cedartown, Ga., and Chinnabee Cotton Mills, Talladega, Ala.

The American Loom Company.

There has recently been a change in the organization of this company. The Searles' interests have, we understand, retired, and the new officers of the company are: William C. Lovering, president; H. E. Tener, vice-president; J. K. Erhard, treasurer; Samuel T. Conover, secretary and assistant treasurer; H. I. Harriman, agent. Most of these gentlemen are closely connected with the American Cotton Company. Mr. Lovering was formerly vice-president of the American Loom Co., and, we believe, also acts in a similar capacity for the American Cotton Co. Among other parties interested are J. G. Cannon of the Fourth National Bank of New York, and Messrs. A. C. Case, president of the American Cotton Company, W. T. Bull and J. Murray Mitchell. Mr. Tener is also treasurer of the American Cotton Co. The company controls the patents and business of the Universal Loom Company, the Readville Machine Works and H. I. Harriman.

George D. Feidt & Co. Assume Business of Bullock & Crenshaw.

On the 1st of October the firm of Bullock & Crenshaw was merged with Geo. D. Feidt & Co., 528 Arch St., Philadelphia.

Bullock & Crenshaw have, with their direct predecessors, been in business since 1819. Originally in the drug business, they added later the importation of drugs, chemicals and chemical apparatus for use in laboratories, schools and manufacturing establishments, and were among the first to bring this class of goods to this country, and are today looked upon as the pioneers in this particular line of business, which has always been an important branch. The late Charles Bullock was widely known in the chemical and pharmaceutical profession.

The firm of George D. Feidt & Co. is a progressive, modern house, originally established at 504 Arch St. They manufacture druggists' supplies and specialties, and act as agents for prominent concerns in that line. In assuming the business of Bullock & Crenshaw, they will add largely to their business, and the particular specialties of the old firm will have careful attention under the new management. Mr. John G. Bullock, who for many years has had charge of the chemical and chemical apparatus department, will continue in the same capacity with the new firm. The building 528 Arch St. will be modernized and rebuilt, giving them thoroughly first-class facilities in a most convenient location.

Cigars.

Taylor & Stinson, cigar manufacturers, whose advertisement appears in the Textile World, have removed their offices from 482 Bourse Building, Philadelphia, to their factory, 1227 Jackson Street, Philadelphia, where all orders should now be sent.

Smokers should send for their price-lists of imported, Key West and domestic cigars; it is most complete. They sell to the consumer only and only by the box, and prepay delivery charges to any part of the United States.

Their trade extends from Texas to Maine and west to California. Their mode of doing business pleases their customers, for they give the privilege of returning at their expense any cigars that do not suit and which are not perfectly satisfactory.

The American Correspondence School.

C. P. Brooks, the Director of the American Correspondence School of Textiles of New Bedford, Mass., has recently had several courses of study added to the curriculum of that Institution, making eighteen different options which the prospective students now have, and covering all the different branches of cotton mill, woolen mill and silk mill work, together with Mill Arithmetic and complete courses and partial courses in Textile Designing.

The growth of the School has been remarkable during the past year as ambitious mill men are realizing the immense benefits that they derive from receiving a thorough textile education without interfering with their daily work.

A new catalogue of the School will be published in a few days giving full particulars of the courses of instruction, rates of tuition and other information, which may be had by sending a postal to C. P. Brooks, Director, New Bedford, Mass.

Recent Orders.

The Howard & Bullough American Machine Co., Pawtucket, R. I., report the following recent orders received by them: Oneida Cotton Mills, Graham, N. C., who are making extensive additions to their present equipment, their entire order for the additional machinery; Warwick Mills, Centreville, R. I., repeat order for speeders; Woodstock Cotton Mills, Anniston, Ala., all of the machinery for the enlargement of this mill; third repeat order for revolving flat cards from the Clover Cotton Mfg. Co., Clover, S. C., and picking machinery for the Metacomet Mfg. Co., Fall River, Mass.

—The Kerr Thread Mills, Fall River, Mass., are installing some new revolving top flat cards. These are of the well-known make of Tweedales & Smalley, Castleton, England, for whom H. G. McKerrow, of 31 State Street, Boston, is the sole American agent. The Liberty Cotton Mills, of Liberty, S. C., are installing additional jack frames of the same make.

Dyeing Horsehair.

The dyeing of horsehair is very difficult, from the varying affinities of the hair for dye. All horsehair which is to be dyed black must be first kept for twenty-four hours in a soap bath at 122° F., then rinsed, and then boiled for two hours in milk of lime (10 per cent. of water and 3 per cent. of lime). The hair is then placed in a solution of 10 per cent. of logwood extract in 15 per cent. of water. After several hours of this the hair is lustred in acetate of iron of 12° Tw., at 77° F., and finally rinsed and soaped.

The Philadelphia Textile School Opening.

The Philadelphia Textile School opened for its eighteenth season on Monday, September 30th, under conditions which are most satisfactory to its many friends. The staff of instructors which has proved so efficient in past seasons remains unchanged, and under the able guidance of Director E. W. France, who has just returned from an inspection of similar European institutions and manufacturing establishments, it will offer even greater opportunities for the student.

Dr. J. Merritt Matthews, under whose direction the work in Chemistry and Dyeing has shown such marked advancement, has also spent the summer months on a tour of investigation abroad.

The rooms and the machinery and other apparatus which constitute this institution's unexcelled plant have had a thorough overhauling and renovating, and without exception the equipment of the various departments has been augmented.

The incoming class will be by far the largest in the school's history, showing that public appreciation continues to smile on this the first effort at textile education in America.

The old saying is again exemplified, "Nothing succeeds like success."

Among the Western Mills.

The Danville Woolen Mills, Danville, Illinois, are very busy on government work and will have all they can do until the holidays. Mr. George Menig is superintendent, and a pleasant gentleman to meet and has got a competent set of overseers. The mill is turning out a very fine line of government work, cassimeres, etc., second to none.

At Peru, Ind., the Turner Mfg. Co., are getting things in good shape to do a big business. Mr. Joshua Turner is president and manager, and is as much of a gentleman as anyone would care to meet. Mr Turner was formerly at the head of the Turner Worsted Co.'s mills at Cleveland, Ohio. He is a successful manufacturer and a good business man. This mill has 7 sets of 48-inch cards, 3500 spindles, and 32 broad looms. The property has been much improved. Mr. Turner is going to improve it still further by putting in a new 100-inch No. 3 Parks & Woolson napper.

At Defiance, the Nightingale Woolen Mills Co. is about to close down permanently, Mr. Nightingale having died some months ago. It is very evident that this mill will be for sale in the near future, for everything points that way. Both mills here, the Defiance Woolen Mills and the Nightingale Woolen Mills Co., are run under one and the same management; thus both plants are at a stand still pending the appointment of a trustee.

The Napoleon Woolen Mills, Napoleon, O., are busy, running full time, with all the orders they can handle. The Augenstein brothers are pleasant gentlemen and know how to treat a traveling man. Mr. C. F. Augenstein is the superintendent and buyer, and understands his business. He is turning out a good line of skirts and blankets, placing the entire production direct with the retail merchant.

The Lexington Woolen Mills, Lexington, Mich., are also well employed on flannel, blankets, socks and heavy mitts. Mr. William Fead is the superintendent, and William and Charles Fead do the buying. They are hustlers. John W. Fead does the selling, and he certainly knows how to do it, for the mill has all it can do. In all my travels I meet in no mill a pleasanter reception than from the Fead boys; always agreeable, and trying to make you feel that you are welcome. John L. Fead, the proprietor of the plant and the father of these boys, is a practical woolen manufacturer of many years' experience and has given each one of his sons a practical woolen mill education.

At Flint, Mich., there is a 6-set mill. Mr. John E. Shortle is superintendent and manager. Mr. Shortle is interested financially in this plant and is another of the many men that thoroughly understands how a woolen mill ought to be run in order to show a balance in favor of the owners of the concern. Mr. Shortle is running altogether on ladies' dress skirts and keeps his mill busy running until 9 o'clock every night that he can. This mill enjoys the reputation of turning out as perfect work as any mill in the West; all of which is certainly very gratifying to the proprietors.

At Eaton Rapids, Mich., is a fine plant, one of the very best I visited and run by electricity; a model plant in every way. The Horner Bros., proprietors, are certainly up-to-date. They make nothing but yarns for weaving and knitting. They do their dyeing, scouring and finishing in the old mill where they have their steam and water power. Here is where they get their power that furnishes the electric current that drives their new mill. They run 3 sets of machinery complete for making these yarns. Each one of the three Homer brothers are practical woolen mill men and are hustlers, and good business men.

At the Clinton Woolen Mfg. Co.'s plant, Clinton, Mich., I found them with all the business they could ask for; running full time and both manager and superintendent happy and satisfied with the outlook. They are running 9 sets of cards and have plenty for them to do. This is one of the best textile plants in the woolen line in the West and is a credit to the management.

At Centreville, Mich., the Michigan Central Woolen Co., successors to the W. Denton Co., seemed to be getting their share of the knit underwear business. They are making a fine garment which speaks very highly for Mr. John Donahue, the genial superintendent. The management are well pleased with the prospects before them.

The South Bend Woolen Co., and also the A. C. Staley Mfg. Co., both at South Bend, Indiana, are very busy running all their machinery full time.

At La Porte, Ind., both mills have all they can do making full time, with plenty of orders ahead. The Sam'l Fox's sons are building an addition to their mill and are putting in two additional sets of the latest improved machinery.

At Milwaukee, Wis., all the textile mills are busy and running all their machinery full time.

The Brickner Woolen Mills Co., at Sheboygan Falls, Wis., are in the same boat, running every machine full time and far behind on orders. This plant is turning

out fine goods. They enjoy an excellent reputation on their production. Mr. W. C. Brickner is treasurer and superintendent, and is a pleasant gentleman to do business with.

The Sheboygan Knitting Co., also, is having a good business and running everything full time. Mr. Edwin Ward is superintendent of this plant and is cordial to all traveling men. It is a pleasure to call on him.

The Appleton Woolen Mills, Appleton, Wis., make a nice line of felts. Here the writer met Mr. Walter Furguson. He is the salesman for this plant and is a hustler. He gives them all they can do running full time every working day.

At Beaver Dam, Wis., both the mills have all the business they can handle. Both management and help are happy. Beaver Dam has two good mills and the town may well be proud of them. They give employment to a good number of hands. Mr. Wilson, formerly with the Warsaw Woolen Mills, Warsaw, Ill., is the superintendent at the Beaver Dam Woolen Mills, and Mr. Will Farley is superintendent at the Beaver Dam Worsted Co.'s mill. Both are well liked.

The Reedsburg Woolen Mills Co., Reedsburg, Wis., seem to be well fixed with orders and turning out first-class goods.

Every western mill I have thus far visited is enjoying good business in their respective lines, not one of them lacking for orders. This fact speaks well for the western manufacturers in the textile line.

F.

America's Cotton.

America has just made a record in cotton exportation. (We can't help it, gentle reader, a commercial newspaper experiences the same difficulty with America as did poor Mr. Dick with the head of King Charles; it will crop up.) In the fiscal year ended June, 1901, the value of cotton and its products exported from the United States amounted to over £73,000,000. That is a nice round figure, the reader will agree, but what we particularly want to draw attention to is its composition. Here are the details:—

Exports of American Cotton and Cotton Products in 1900-1901.

Cotton, Raw	£62,700,000
Cotton, Manufactured	4,050,000
Cotton Seed Oil	3,300,000
Cotton Seed Meal	2,600,000
Cotton Waste	280,000
Cotton Seed	73,000

Notice that the exports of cotton goods were only valued at £4,000,000, or one-fifteenth of the value of the raw cotton exported. The menace to Lancashire lies in the fact that, as surely as night follows day, the figures representing American raw cotton exports and American manufactured cotton exports will rapidly approach each other; in five years the ratio 1 to 15 will probably be more like 1 to 10; in ten years we shall be surprised if it is more disproportionate than 1 to 5. We say that this is to be expected; yet we doubt not that, when it is an accomplished fact, the usual cry of surprise and alarm will be heard in the land.—London Commercial Intelligence.

Among the Mills in New York State.

Every mill in Syracuse seems to be running full and doing a good business.

The Fulton Worsted Mills, Fulton, N. Y., are busy and through the kindness of Mr. Weeden, the Agt., Mr. Koehler, the Supt., took me all through the mill. They are running some departments all night and are preparing to run the whole mill night and day. They have sent the two sets of woolen cards to one of their other mills. Mr. Weeden told me that two days after the goods were opened they had orders enough to more than run the whole season. Every thing seemed to be running like clock work, and the work looked well. These mills are ably managed.

At Oswego, N. Y. The Swits Conde Co. are very busy. The Mohawk Mfg. Co. are running all their cards sixty hours a week. The Oswego Knitting Co. have started up and are running full. The Standard Yarn Co. are running in full and are very busy. At Fred Conde's mill they are running for all they are worth. The market is close but they are running on a fair margin.

The Auburn States Prison officials are running all their machinery. They take things very easy as it is not a matter of quantity here. All they want is enough to supply the other state institutions.

The Columbian Cordage Co. is a handsome mill with nice green lawns and large beds of plants. The Supt., Mr. Bodell, is a pleasant man, who seems to be a hustler with his shirt sleeves rolled away up. They employ a good many hands and are very busy the year round.

The Melrose Co. is no more, the name being changed to the Golden Fleece Mills, Auburn Blanket Co. They have orders enough ahead to run night and day, and will do so just as soon as they can get help. Nye and Wait Carpet Co. are running full, and no changes have been made.

Kidney and Brigden Co. are also busy. The Auburn Woolen Co. have everything running full with no changes lately.

At Seneca Woolen Mills, Seneca Falls, Thomas Hinchliffe is Supt. He told me he had been there five weeks. Mr. Howe from W. Eaton, Pa., is now carder in place of Edward Ralfe who was stabbed to death.

The Waterloo Woolen Mfg. Co. is running full.

At Skaneateles Falls, the Ayshire Mills and the Glenside Woolen Mills are running full time. James Mitchell, Supt., is in England for his health and has been away six months, his son taking his place.

The Crown Mills, Marcellus, are running full time and with no changes. In Camillus, Central Knitting Works, and the Middlesex Knitting Mills were shutting down at noon. They are not very busy.

In Cohoes things are very blue in the knitting mills where they have woolen machinery. Some have shut down the card rooms and are running on cop yarn, while others who say they are running their carding and spinning are only running one set or so. They have been running short time for a long period.

—The Aetna Cotton Mills, Union, S. C., have adopted the American Moistening Company's system of humidifiers.

Neutralizing Calcareous Water.

The following interesting reply to an inquiry as to the best means of neutralizing calcareous water is given in a German contemporary: According to the analysis, the water contains sulphate of lime (gypsum) and sulphate of magnesia, and is very hard. The agents added for correcting it—soda and slaked lime—are evidently intended to be converted into caustic soda and carbonate of lime. The former remains in solution, while the latter precipitates. This caustic soda next, is to precipitate the sulphates of lime and magnesia. As is shown by the analysis, the gypsum requires the principal attention. This, it is true, is decomposed by the caustic soda, whereby sulphate of soda and caustic lime are formed. The former remains in solution, the latter passing out of consideration. The evil complained of is caused by the fact that the caustic lime partly dissolves in water, and upon the admission of air forms carbonate of lime (chalk), as the carbonic acid of the air combines with the lime. If the separating carbonate of lime floats upon the water, it is a sign that its formation can take place only where the calcareous water comes in contact with the air. Therefore it is on the surface; but as soon as the floating layer has become sufficiently thick it falls to the bottom. The subsequent filtering of the water through shavings is for the apparent purpose of bringing the water as much as possible into contact with air, to precipitate the lime by a plentiful supply of carbonic acid. From the statement of the correspondent we learn that the filter is cleaned once every week, from which may be concluded that precipitation takes place rapidly. The cause for complaint is undoubtedly the fact that all the lime in not precipitated during the filtering of the water through the shavings, because an insufficient quantity of air, or carbonic acid gas, comes in contact with it. It is better to accomplish this by either passing the water more slowly through the filter, or using a second filter. But it must always be remembered that the shavings do not really filter water, but only bring the water more readily in contact with the air. The looser they are put in, the better they will fulfill this purpose. The formation of the film floating upon the water complained of, is not at all an evil; on the contrary, it is desirable. The lime separating in this manner is innocuous, because it is insoluble. It neither forms scale in the boiler, nor does it waste the soap in washing and milling.

Scouring Wool and Woolens.

The cleaning of wool before dyeing should have all the attention possible. Even in dyeing a logwood black the wool cannot be too carefully scoured, and the dyer ought to know that if the scouring is not perfect, the dyeing will appear poor and the goods will not have the proper appearance, brilliancy or feel. An imperfect scouring leads to imperfect mordanting and imperfect dyeing even in dark shades. Some receipts are given which practice has proved good.

Loose Wool.—For 100 pounds of wool use two baths. The first should contain:

Water, 375 gallons; Calcined Soda Ash, 12 pounds; Carbonate of Ammonia, 2 pounds. Work the wool in this for 20 minutes at 95° F., raise, squeeze between wooden rolls, and then enter into the second bath, containing:

Water, 375 gallons; Soda, 10 pounds. Allow to stand 15 minutes at 95° F., press and rinse sufficiently with pure water. As the first bath takes all the impurities, it is poor economy to use it more than three or four times, adding each time the quantities of soda and ammonia indicated.

Woolen Yarn.—For 60 pounds of yarn use two wooden boxes of 100 gallons capacity each. The first bath should contain 90 gallons of soft water at 86° F. Work thoroughly in the bath, and allow to stand 20 minutes, wring, and let the drippings run back into the box. Repeat the operation in the second box, and finally rinse repeatedly in soft water. Extract, dry or mordant. The liquor in the second box, after the addition of two pounds of ammonia water at 10° B., will serve as the first box in the next operation. Use the percentages of alkalies as for wool.

Woolen Piece Goods.—In a large wooden box dissolve for 160 pounds of goods 8 pounds of soda and 4 pounds of carbonate of ammonia, and enter the goods at 100° F. Turn them for 20 minutes, and let them soak over night in the liquor. On the next day work them again for ten minutes, squeeze them, wash them, and keep them spread out until time to mordant them.

Boiler Composition and Steam for Dyeing.

If the steam user could get hold of pure water he would have no need to use preparations for the prevention of scale in his boilers, nor would the dyer have need to consider whether such preparations, if they get into the steam that heats his dye-vats, have any effect on his colors. But, unfortunately, the steam user cannot get hold of pure water, and must be content to employ such water as nature supplies him with, even if that water be highly charged with lime and magnesia salts that form a scale in his boilers. In order to prevent the formation of this scale he purchases "boiler compositions," and sometimes, if he is a dyer, he has an uncomfortable feeling that these might affect the dyeing operations by going over with the steam. Now all the substances which the writer has found in boiler compositions have been of a perfectly non-volatile character, and so, theoretically, they will not pass over in the steam, and hence cannot get in the dye liquors. The only chance of their being carried along with the steam is when the sludge, scale, and composition are allowed to accumulate to such an extent that the water inside the boiler does not boil quietly but in spurts and jerks, and then some of the water is jerked into the steam pipe and is then carried along the pipe by the steam. Another cause is the want of sufficient steam space in the boiler. There should always be allowed sufficient room in the boiler for the natural ebullition which occurs by the water boiling, so that any particles of water carried up into the steam space can settle down before the steam passes into the steam delivery pipe.

Preserving Dye Vats.

Wooden dye vats and liquor cisterns, when used, sooner or later become saturated with the various liquors and chemicals, some of which will tend to rot the wood in time. Besides, such saturated vats are somewhat difficult to keep clean. In order to preserve wooden dye vats or tanks they might be covered over with a composition made by dissolving 2½ lbs. shellac, 4½ ozs. rosin, and 4 ozs. Venice turpentine in 1 gallon of methylated spirit. The ingredients are mixed together in a bottle or other convenient vessel and then shaken at intervals until they are thoroughly incorporated. This is applied by a brush but care should be taken that the wood is quite dry. This composition will not affect, nor be changed by, any dye chemicals or dye liquors with the exception of caustic lyes.

It is foolish economy for a dye house to be restricted in its equipments; the work is never so well done, nor is it so quickly done. Let us take as an example indigo vat dyeing. In order to produce certain shades it is necessary to dip the cotton two or three times. In all the best dyehouses these dippings are done in separate vats, and the result is an excellent color. But for the sake of saving room and the time and trouble of setting several vats, some dyers will only have one vat, and the consequence is that the work turned out is not up to the mark. It is dull, and rubs badly, while the vat itself gets deficient in dyeing power very quickly, and becomes charged with deposited indigo. There is really in the end no saving, and there is no satisfaction to the dyer in turning out his work.—Dyer and Calico Printer.

The Day's Chief Topic.

Where and how to spend the summer is a question to be considered by nearly everybody. If you are not interested, you should be, and if you are, consider New England, with its great wealth of mountains, rivers, lakes, seashore and historic spots.

In the heart of the Appalachian Range, the secondary range of America, which includes the famous White Mountains, are hundreds of places where one may go and enjoy the cool, quiet grandeur of the magnificent panoramic scenery, its grand precipitous rocks, its green fields and the beautiful silvery lakes sprinkled here and there like bits of broken mirror.

Think of the places where sports of all kinds may be enjoyed, including the popular games of golf, polo and tennis.

Leave the mountains and turn to the beautiful lakes and streams, or to the vast, grand ocean which forms the eastern boundary of New England. Here boating, fishing, yachting and bathing are participated in more than in any other part of the world.

New England lacks not historically, but can boast of containing many relics of the early pilgrim settlers, as well as of the Indian and Revolutionary periods.

A valuable book containing a list of hotels and boarding houses with their rates and accommodations, also maps, routes and rates of the Boston & Maine Railroad and connections, will be sent free to any address on application to the Passenger Department of the Boston & Maine Railroad, Boston, Mass.

—The Portland Cordage Company, Portland, Ore., are extending their system of humidifiers recently ordered of the American Moistening Company, Boston, Mass.

—The Bates Mfg. Company, Lewiston, Maine, have placed a repeat order for humidifiers with the American Moistening Company, Boston, Mass.

—Messrs. Wm. H. Grundy & Co., Bristol, Pa., have placed a repeat order for humidifiers with the American Moistening Company, Boston, Mass.

—The Orient Mfg. Co., Charlotte, N. C., have placed a large order for humidifiers with the American Moistening Company, Boston, Mass.

Textile Patents.

(*Continued from page 663*).

Loom Shuttle Guard. 681,460. William Rioux, Fall River, Mass.

Loom Stop Motion. 682,445. Horace Wyman, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass.

Loom Stop Motion. 682,446. Horace Wyman, Worcester, Mass., assignor to Crompton & Knowles Loom Works, same place.

Loom Thread Parting Mechanism. 683,423. Clare H. Draper, Hopedale, Mass., assignor to Draper Company, same place.

Loom Warp Tension Device. 681,520. Frederick Stolzenberg, Shelton, Conn., assignor to Sidney Blumental & Co., same place.

Loom Weft Fork Clearer. 682,553. Belonie Janelle, Manchester, N. H., assignor of two-thirds to Herman F. Straw and Harry E. Parker, same place.

Loom Weft Replenishing and Controlling Mechanism. 681,647. William H. Baker, Central Falls, R. I., and Frederic E. Kip, Montclair, N. J.

Medicated Fabric. 682,344. Claude A. O. Rosell, New York, N. Y., assignor to Jeremiah A. Scriven, same place.

Pile Fabric, Producing Figured Double. 683,340. Rudolf Schwartz, Crefeld, Germany.

Roving Machines, etc., Means for Preventing Singles in. 681,612. Thomas Bentley, Franklin, Mass., assignor of one half to Draper Company, Portland, Me., and Hopedale, Mass.

Spinning Machine. 681,628. George J. Cuzner, Miamisburg, Ohio, assignor to the Hoover & Gamble Company, same place.

Spinning Ring. 682,418. Thure. F. Moberg and Fred. E. Moberg, Boston, Mass.

Spinning Yarn. 683,418. Charles H. Arnold, Grosvenordale, Conn., assignor to Draper Company, Hopedale, Mass.

Twisting Machine, Fabric. 682,245. Edward F. Dreman, Cleveland, Ohio.

Velvet, Manufacture of. 683,382. Robert Cleff and Adolf Langen, Krefeld, Germany.

Winding Machine. 682,770. Simon W. Wardwell, Jr., Providence, R. I., assignor to Universal Winding Company, Portland, Me.

CLING-SURFACE IS NOT STICKY.

Cling-Surface acts differently from the belt dressings.

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So you can run with clean belts.

But they will never slip, can be run easy, transmitting more power.

And it makes and keep belts pliable, elastic, waterproof and in perfect condition.

Order on trial. Test it. Pay only if O. K. after trial.

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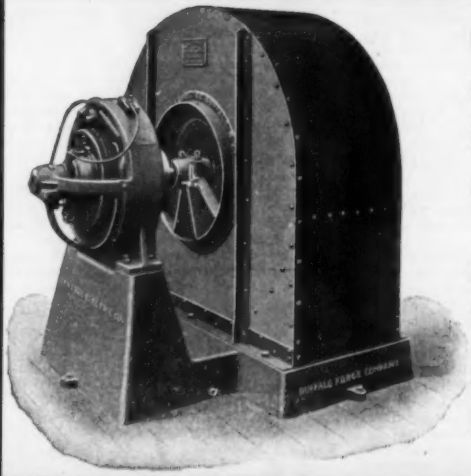
Buffalo Forge Company Buffalo



Buffalo
Steel Plate Fans
Steam,
Pulley, Electric,
FOR
Heating,
Ventilating, Drying,
Mechanical
Draft, etc.

Buffalo Forge Company Buffalo

BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Alphabetical Index to Advertisements follows this Classified List.

Air Moistening System.
American Moistening Co., 150 Devonshire St., Boston.

Architects and Mill Engineers.
Ferguson, John W., Paterson, N. J.
Gray, Arthur F., Exchange Bldg., Boston.
Lockwood Greene & Co., 93 Federal St., Boston, Mass.
Praray, C. A. M. & Co., Banigan Bldg., Providence, R. I.

Artificial Stone.
Warren Bros. Co., 143 Federal St., Boston.

Asphalting & Asphalt Materials.
Warren Bros. Co , 143 Federal St., Boston.

Asphalt Roofing.
Warren Bros. Co. 143 Federal St., Boston.

Automatic Feeds for Cotton and Wool.
Atlas Foundry & Mch. Co., Newark, N. J.
Philadelphia Dyeing Machinery Co., 6721 Germantown Ave., Phila., Pa.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Balling Machine.
Torrance Mfg. Co, 18 Davis St, E. Newark, N. J.

Bandings.
See under Yarns.

Bands and Labels.
Docker-Foster Co., Phila., Pa.
Tioga Stamp & Printing Block Co., 807 Venango St., Phila.

Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Belting.
Alexander Bros., 410 No. 3d St., Phila., Pa.
Boston Belting Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Jeffrey Manufacturing Co., Columbus, Ohio.
Link Belt Machinery Co., Chicago, Ill.
Popham, Henry, & Son, Newark, New Jersey.
Shultz Belting Co., St. Louis, Mo.
Smith, Jas. Woolen Mach. Co., Phila, Pa.
See also Mill Supplies.

Belt Dressing.
Alexander Bros, 410 No. 3d St, Phila, Pa.
Cling Surface Co., 168 Virginia St., Buffalo, N. Y.
Stephenson Mfg. Co., Albany, N. Y.

Belt Hooks.
Bristol Co., Waterbury, Ct.

Belt Lacing Machine.
Diamond Drill & Machine Co., Birdsboro, Pa.

Bindings.
See Tapes and Braids.

Bleaching Materials.
Bosson & Lane, Boston.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Block Cutting for Printing.
Atlas Copper Stamp Works, 15 Whitehall St., New York.
International Mfg. Co., Brooklyn, N. Y.

Blowers, and Blower Systems.
American Blower Co., Detroit. Mich.
Buffalo Forge Co., Buffalo, N. Y.
The Sterling Blower & Pipe Mfg. Co., Hartford, Conn.
Sturtevant, B. F. Co., Boston, Mass.

Bobbins, Spools, Shuttles, Etc.
Murray, C. O., Nashua, N. H.
Southern Bobbin Co., Greensboro, N. C.
Sweet & Doyle, Cohoes, N. Y.
Tebbets, E. L., & Co., Locke's Mill, Me.

Boilers.
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Boxes, Cloth Boards, Etc.
Pearson, J. T, Kensington, Pa.

Boxes Paper.
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Braiding Machinery.
New England Butt Co., Providence, R. I.
Textile Machine Works, Reading, Pa.

Braids.
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Brass (Perforated.)
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Brushes.
Felton, S. A. & Son Co., Manchester, N. H.
Jacobus, A. G. Verona, N. J.
Parks & Woolson Mach. Co., Springfield, Vt.

Brushers
See Napping Machines.

Burr Pickers.
Atlas Foundry & Mch. Co., Newark, N. J.
Curtis & Marble Machine Co., Worcester Mass.
Sargent's, C. G Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Calico Printers' Machinery and Supplies.
Arlington Machine Works, (Arthur Birch) Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W., Sons & Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
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Phillips Co, The Thomas, Providence, R. I.
Taunton New Bedford Copper Co., New Bedford, Mass.
Rusden Machine Co., Warren, R. I.
See also Dyeing, Bleaching Machinery, etc.

Canvas Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Carbonizing Machinery.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts , Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Card Clothing.
Ashworth, Elijah, Fall River, Mass.
Booth, Benj. & Co., Philadelphia.
Leigh, Evan A, 35 Mason Building, Boston.

Card Grinding Machinery.
Hardy Machine Co., Biddeford, Me.
Smith, Jas. Woolen Machinery Co., Phila.

Carders' Tools.
Brown, W. H, Mechanic St, Worcester Mass.

Carpet Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila. Pa.
Curtis & Marble Machine Co, Worcester, Ma.
Furbush, M. A, & Son, Machine Co, Phila, Pa.
Granger Foundry & Machine Co., Providence, R. I.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Parks & Woolson Mach. Co., Springfield, Vt.
Smith, Jas. Woolen Machinery Co., Phila.

Cement "Dealers."
Warren Bros. Co., 143 Federal St., Boston.

Chemicals and Apparatus.
Bullock & Crenshaw, 528 Arch St, Phila, Pa.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Cigars.
Taylor & Stinson, 482 Bourse, Phila, Pa.

Cling Surface.
Cling Surface Mfg. Co., Buffalo, N. Y.
Clocks.
Howard, E. Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.
Clutches.
American Tool & Machine Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., The, New Haven, Conn.
Hunter, James, Machine Co., North Adams, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Combs (Wool and Cotton).
Crabb, William, & Co, Newark, N. J.
Townsend, Thomas, 157 Orange St., Providence, R. I.
Commission Merchants (Dry Goods, Knit Goods).
Charleston Export & Commission Co., Charleston, S. C.
Doane, Thomas H., 233 Monroe St., Chicago, Ill.
Wagner, M. & Co., 213 Ninth St., Pittsburg Pa.
Concrete.
Warren Bros. Co., 143 Federal St, Boston.
Conveying Machinery and Chains.
Jeffrey Manufacturing Co., Columbus, O.
Link Belt Machines Co., Chicago, Ill.
The Sterling Blower & Pipe Mfg. Co., Hartford, Conn.
Cop Tubes.
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Copper Gaskets.
U. S. Mineral Wool Co., 149 Liberty St., New York.
Copper (Perforated.)
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Copper Print Rollers.
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Taunton-New Bedford Copper Co, New Bedford, Mass.
Copper Work for Dyers.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.
Cotton Elevators.
Buffalo Forge Co., Buffalo, N. Y.
Link Belt Machinery Co., Chicago Ill.
Cotton Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila. Pa.
American Loom Co., Readville, Mass.
Ashworth, Elijah, Fall River, Mass.
Atherton, A. T., Machine Co., Pawtucket, R. I.
Barber & Coleman, Pemberton Sq., Boston.
Butterworth, H. W. & Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Fairmount Machine Co, 22d and Wood Sts, Philadelphia.
Houghton, L. T. & Sons, Worcester, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Kitson Machine Co., Lowell, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
Lever, Oswald, Lehigh Ave. and Masher St., Philadelphia.
Lowe, Stephen C., 186 Devonshire St., Boston, Agt. John Hetherington & Sons, Ltd.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
McKerrow, H. G, Boston, Mass.
Parks & Woolson Mach. Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.
Whitin Machine Wks, Whitinsville, Mass.
Cotton Openers and Lappers.
Atherton, A. T., Machine Co., Pawtucket R. I.
Kitson Machine Co, Lowell, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Cotton Softeners.
Boston & Lane, Boston, Mass.
Cotton Waste.
Charles, W. B., Amsterdam, N. Y.
Credits.
National Mercantile Agency, New York and Boston.
Cutters for Knit Fabrics.
Goodwin, J. C., Diamond and Second Sts., Phila., Pa.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.
Dextrine.
Stein, Hirsh & Co, 165 Duane St., New York.
Dryers.
American Blower Co., Detroit.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
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Philadelphia Textile Machinery Co, Philadelphia, Pa.
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Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co, 24 Oliver St, Boston, Mass.
Dusters.
See Wool and Waste Dusters.
Dust Collectors.
Allington & Curtis Mfg. Co., Saginaw, Mich.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
The Sterling Blower & Pipe Mfg. Co., Hartford, Conn.
Dyers, Bleachers and Finishers.
American Yarn Printing Works, 134-140 North 22d St., Philadelphia.
Barnesville Mfg. Co., Barnesville, Ga.
Brophy's, T, Sons, Jasper St, Philadelphia
Cohoes Dye Works, Cohoes, N. Y.
Cranston Worsted Mills (yarns), Bristol, R. I.
Davidson & Brooke, 2560 No. 3rd St., Philadelphia.
Duncan & Baillie, Cohoes, N. Y.
Firth & Foster Co, Kensington, Pa.
Franklin Bleaching & Finishing Works, Ltd., 70th St., and Haverford Ave., Phila.
Greenwood, R. & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Lorimers, The Wm. H. & Sons Co., Phila.
Molt Bros., Millbury, Mass. (Indigo Blue.)
Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Pond Lily Co., New Haven, Ct.
Providence Mills Mfg. Co., 55 Girard Ave., Philadelphia, Pa.
Rowland, Samuel, Schuylkill Haven, Pa.
U. S. Finishing Co., New York.
Warren, W, Thread Works, Westfield, Mass.
Dyeing, Drying, Bleaching and Finishing Machinery.
American Blower Co., Detroit.
Automatic Dyeing & Scouring Machinery Co., 776 E. 163rd Street, New York

Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Antisdel, E. M., 12 Miller St., Utica, N. Y., (Knit Dryer.)
Birch Bros. (Albert Birch), Somerville. Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W, & Sons Co Phila Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Delahunty Dyeing Machine Co., Pittston, Pa.
Dubois, A. N., 2170 Ledgely Ave., Philadelphia, Pa. (Black for Hosiery.)
Fairmount Machine Co, 22 and Wood Sts, Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Kenyon, D. R. & Son, Raritan, N. J.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Knapp, C. H., Paterson, N. J.
Lincoln Co., The, Hartford, Ct.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Philadelphia Textile Specialty Co., 500 North 12th St., Phila.
Phillips, The Thomas Co, 91-95 South Main St, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)
Webendorfer & Walling, Paterson, N. J.

Dye House Cans.
Hill, James Mfg. Co., Providence, R. I.

Dyehouse Floors.
Warren Bros., 143 Federal St., Boston.

Dye Sticks.
Bailey, Frank, Cedar Brook, New Jersey.
Haedrich, E. M., Philadelphia, Pa.

Dyestuffs and Chemicals.
Atteaux, F. E. & Co., 174-176 Purchase St., Boston.
Berlin Aniline Works, 72 Front St., N. Y.
Bischoff, & Co, 87 Park Place, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Calmore & Co., 501 Chestnut St , Phila.
Corey, S. J, 273 Congress St, Boston.
Dillon & Co. 20 Cedar St, New York.
Dubois, A. N., 2170 Ledgely Ave., Phila., Pa.
Farbenfabriken of Elberfeld Co, 40 Stone St, N. Y.
Fortner, L. B., 36 Strawberry St., Phila.
Geisenheimer & Co, 189 Front St, New York.
Holliday & Sons, Ltd., Read, 7 Platt St., New York.
Janney, O. S, & Co, Phila. and Boston.
Johnson, Chas. A, & Co, 22 Dey St, N. Y
Johnson, Wm. G, & Co, Uncasville, Conn.
Keller, John J, & Co, 104-106 Murray St, N. Y.
Klipstein, A, & Co, 122 Pearl St, N. Y.
Koechl, Victor, & Co, 122 Hudson St, N. Y.
Krauskopf, L., 430 North 3rd St., Phila.
Kuttroff, Pickhardt & Co., New York.
Matheson, W. J, & Co, 182-184 Front St, N. Y.
Molt Bros., Millbury, Mass. (Indigo Blue.)
N. Y. & Boston Dyewood Co, 55 Beekman St, New York.
Oakes Mfg. Co, 93 Pearl St, N. Y.
Roessler & Hasslacher Chemical Co, 100 William St , New York.
Ross, W. A. & Bro., 100 William St., N. Y.
Schoellkopf, Hartford & Hanna Co., Philadelphia, N. Y. and Boston.
Sharpless Dye Wood Ext. Co, The Bourse, Phila, Pa.
Stamford Mfg. Co, 133-137 Front St., N. Y.
Sykes & Street, 85 Water St, N. Y.
Thayer, Ed. M., 106 Broad St., Boston, Mass.
United Indigo & Chemical Co., Ltd., 176 Federal St., Boston.
Vila, H. S., 115 So. 2nd St., Philadelphia, Pa.

Dynamos.
General Electric Co., 44 Broad St., New York
Sturtevant, Co., B. F. Boston.

Edgings.
See Tapes, Braids and Edgings.

Elastic Web Calendering Machines.
Knapp, C. H., Paterson, N. J.

Electrotyping and Printing.
Whitcomb, H. C, & Co, Boston.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N.Y.
Eastern Machinery Co, The, New Haven Conn.
Jeffrey Manufacturing Co., Columbus, O.
Howard, Geo. C., 1783 Barker St., Phila., Pa.

Electrical Construction.
General Electric Co., 44 Broad St., New York.

Electric Fans.
American Blower Co., Detroit.
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., 44 Broad St., New York.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa
Sturtevant Co., B. F., Boston.

Electric Lighting.
General Electric Co., 44 Broad St., New York.

Electric Lighting Apparatus.
Incandescent Electric Light Manipulator Co., 168 Bedford St., Boston.

Electric Motors.
General Electric Co., 44 Broad St., New York.
Sturtevant Co., B. F., Boston.

Engine Foundations.
Warren Bros. Co., 143 Federal St., Boston.

Engineers, Mechanical.
Ferguson, John W, Paterson, N. J.

Exhaust Heads.
Burt Manufacturing Co , Akron, Ohio.
The Sterling Blower & Pipe Mfg, Co., Hartford, Conn.

Fans—Exhaust and Ventilating.
See Ventilating Apparatus.

Feed Water Heaters.
Green Fuel Economizer Co., Matteawan N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feed Water Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feeds
See Automatic Feeds.

Filters.
Scaife, W. B. & Sons, Pittsburg, Pa.

Finishing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Fluted Rolls.
Cohoes Foundry & Machine Co, Cohoes, N.Y
Thurston, A. G, & Son, Box 528, Fall River. Mass.

Forges.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Friction Clutches.
See Clutches.

Friction Hoisting Drums.
Eastern Machinery Co., New Haven, Conn.

Fuel Economizers.
Green Fuel Economizer Co., Matteawan, N. Y.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R. & Son, Raritan, N. J.

Garnetts.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Gas Engines.
Jones, Lewis, 40½ and Media Sts, Phila, Pa.

Gas Exhausters.
Sturtevant Co., B F., Boston.

Gears.
New Process Raw Hide Co., Syracuse, N. Y.

Gear Cutting Machine.
Whiton, The D. E, Co, New London, Conn.

Generating Sets.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F , Boston.

Grate Bars.
U. S. Rocking Grate Bar Co., Elizabeth, N. J.

Heating.
See Ventilating.
Heddles.
Steel Heddle Mfg. Co., 1842 Germantown Ave., Phila.
Watson, L. S, Mfg. Co, Leicester, Mass.
Hoisting Machinery.
The Eastern Machinery Co., New Haven, Conn.
Hose.
Boston Belting Co., Boston.
Hosiery Labels.
Docker, Foster Co., Philadelphia, Pa.
Saranac Electrical Mfg. Co., St. Joseph, Mich.
Tioga Stamp & Printing Block Co., 807 Venango St., Philadelphia.
Hosiery Boards.
Pearson, J. T, Kensington, Pa.
Humidifying Apparatus.
American Air Moistening Co., Boston.
Hydro Extractors.
American Tool & Machine Co , Boston.
Rusden Machine Co., Warren, R. I.
Ironing Machines for Knit Goods.
Craw, J. W Laundry Machinery Co., So. Norwalk, Conn.
Key Seaters.
Leisenring Mfg. Co , Philadelphia, Pa.
Knit Goods Edgings, Trimmings, etc.
Cathcart, John & Co., 115 Franklin St., New York.
Chapin, Geo. W. Philadelphia, Pa.
Charles, W, B., Amsterdam, N. Y.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Friedberger & Co, Edgings, Germantown Phila, Pa.
Hepner & Horwitz, Lacings, 30 Howard St, N. Y.
Krout & Fite Mfg. Co, Allegheny Ave. and Emerald St., Phila.
Schneebeli, G. A. & Co., Nazareth, Penn.
Weimar Bros, 1817 East York St, Phila. Pa.
Knit Goods Finishing Machines, Crochet, Etc.
Craw, J. W. Laundry Machinery Co., So. Norwalk, Conn.
Industrial Mfg. Co., Camden, N J.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 2079 E. Cumberland St, Phila Pa.
Wilcox & Gibbs Sewing Mch. Co., New York.
Knitting Machine Cylinders.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Stafford & Holt, Little Falls, N. Y.
Knitting Machinery.
American Knitting Machine Co., 6th and Arch St., Philadelphia, Pa.
Antisdel, E. M., 12 Miller St., Utica, N Y.
Beattie, Wm. & Son, Cohoes, N. Y.
Branson Machine Co., 506 N. American St., Philadelphia.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Crane Mfg. Co, Lakeport, N. H.
Excelsior Knitting Machine Manufacturing Co., Allentown, Pa.
Goodwin, J. C. Second and Diamond Sts., Phila., Pa. (Cutters.)
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y.
Keystone Knitting Machine Mfg. Co., 40 N. 7th St., Phila.
Lamb Knitting Mach. Mfg. Co., Chicopee Falls, Mass.
Leighton Machine Co, Manchester, N. H.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
McMichael & Wildman Mfg. Co, Norristown, Pa.
Mueller, Arthur, 760 Lexington Avenue., Brooklyn, N. Y.
Nye & Tredick, 606 Arch St, Phila, Pa.
Paxton & O'Neill, 127 Bread St, Phila, Pa.
Pepper Mfg. Co, Lakeport, N. H.
Scott & Williams, 2079 E. Cumberland St., Phila., Pa.
Snyder, Homer P. Mfg. Co. Little Falls, N. Y.
Stafford & Holt, Little Falls, N. Y.
Taylor, James, 835 Arch St., Philadelphia.
Tompkins Bros., Troy, N. Y.
Knitting Needles and Supplies.
Breedon, Wm. & Son, Amsterdam, N. Y.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Corey, Wm, Co, Manchester, N. H.
Crane Mfg. Co , Lakeport, N. H.
Dodge Needle Co., Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Keystone Knitting Machine Mfg. Co., 40 N 7th St., Philadelphia.
Lamb Knitting Machine Mfg. Co., Chicopee Falls, Mass.
Manufacturers' Supplies Co., 66 No. 4th St. Philadelphia.
Mayo Knitting Machine & Needle Co Franklin, N. H.
Page Needle Co , Chicopee Falls, Mass.
Treat, Orlon, Manchester Green, Conn.
Wardwell Needle Co, Lakeport, N. H.
Knotter for Spoolers.
Barber & Coleman, 504 Sears Bldg., Boston.
Labeling Machine.
Saranac Electrical Mfg. Co., St. Joseph, Mich.
Laboratory Outfits.
Bullock & Crenshaw, 528 Arch St, Phila, Pa
Looms.
American Loom Co., Readville, Mass.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts. Philadelphia.
Furbush, M. A, & Son Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St , Phila., Pa. (For wire.)
Kilburn, Lincoln & Co, Fall River, Mass.
Leigh, Evan A., 35 Mason Bldg., Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Ross, Hugh R., Belfast, Ireland.
Smith, Jas. Woolen Machinery Co., Phila.
Whitin Machine Works, Whitinsville, Mass.
Loom Pickers.
Loom Picker Co., Biddeford, Me.
Lubricators
Dixon, Jos., Crucible Co, Jersey City, N. J.
Lumber.
Stearns, A. T, Lumber Co, Neponset, Mass.
Lumpers.
Gerry, George, & Son, Athol, Mass.
Machinery Dealers.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Schofield, Geo. L. Phila., Pa.
Taylor, James, 835 Arch St., Philadelphia.
Machinists' Tools.
Dodge Mfg Co., Mishawaka, Ind.
Leisenring Mfg. Co., Philadelphia, Pa.
Whiton, The D. E. Co, New London, Conn.
Mails.
Walder, J, Paterson, N. J.
Measuring and Folding Machines.
Curtis & Marble Machine Co, Worcester, Mass.
Elliott & Hall, 544 Hermon St, Worcester Mass.
Fabric Measuring & Packaging Co., Postal Telegraph Bldg , New York.
Parks & Woolson Mach Co , Springfield, Vt.
Mechanical Draft.
American Blower Co., Detroit.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.
Mercerizing Machinery.
Butterworth, H. W. & Sons, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Klauder Weldon Dyeing Machine Co., Amsterdam, N. Y.
Philadelphia Textile Specialty Co., 500 North 12th St , Phila.
Rusden Machine Co., Warren, R. I.
Mill Architects
See Architects & Mill Engineers.
Mill Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Mill Brushes.
See Brushes.
Mill Builders and Engineers.
Ferguson, John W, Paterson, N. J.
Mill Supplies.
American Supply Co, Providence, R. I.
Bamford & Smith, Pascoag, R. I.
Bristol, The, Co., Waterbury, Conn
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Carpenter, Geo. B. & Co., Chicago, Ill.
Dixon Lubricating Saddle Co., Bristol, R.I
Dodge Mfg. Co., Mishawak , Ind.
Douglas, R. D., Fall River, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Jeffrey Manufacturing Co., Columbus, O.
Lane, W. T. & Bro., Port Chester, N. Y.
Leisenring, John Mfg Co., Phila., Pa.
National Supply Co , Paterson, N. J.
Smith, Jas. Woolen Machinery Co., Phila.
Southern Bobbin Co., Greensboro, N. C.
Steel-Heddle Mfg. Co., 1842 Germantown Ave. Phila.
Sweet & Doyle, Cohoes, N. Y
Thurston, A. G, & Son, Fall River, Mass.
Watson, L. S, Mfg.Co, Leicester, Mass.
Napping Machines.
Columbia Napping Machine Co., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.
Noils (Silk.)
Ryle, Wm. & Co., 54 Howard St., N. Y.
Malcolm Mills Co., Frankford, Pa.
Oil Cabinets.
New York Oil Cabinet Co., New York.
Oil Filters.
Burt Manufacturing Co., Akron, Ohio.
Oil, Grease, Tallow.
Krauskopf, L , 430 North 3rd St., Phila.
Packing.
Boston Belting Co , Boston.
Jenkins Bros., New York.
Pantagraphs for Mill Engraving.
Johnson, C. A, & Co, 22 Dey St, New York.
Paper Tubes.
Douglas, R. D., Fall River, Mass.
Patent Solicitors.
Crosby & Gregory, 34 School St, Boston, Mass.
Siggers, E. G., Washington D. C.
Wolhaupter, D. P., Equitable Bldg., Washton, D. C.
Pavers & Paving Materials.
Warren Bros. Co., 143 Federal St., Boston.
Perforated Metal.
American Perforated Metal Co., 171 Wooster St., New York.
Beckley, A. J. & Co., Garwood, N. J.
Peroxide of Sodium.
Roessler & Hasslacher Chemical Co., 100 William St, New York.
Picker Sticks.
Loom Picker Co., Biddeford, Me.
Southern Bobbin Co., Greensboro, N. C.
Pipe Covering.
Keasbey, E. A. 83 Warren St, New York.
Pneumatic Conveying.
See Ventilating.
Power Transmitting Machinery.
Carpenter, Geo. B. & Co , Chicago Ill.
Dodge Mfg. Co , Mishawaka, Ind.
Durable Wire Rope Co., 178 Congress St., Boston.
Eastern Machinery Co, New Haven, Conn.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Kilburn, Lincoln & Co Fall River, Mass.
Link Belt Machinery Co, Chicago, Ill.
Rusden Machine Co., Warren, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Saginaw Manufacturing Co., Saginaw, Mich.
Smith, Jas. Woolen Machinery Co., Phila.
Preparatory Machinery, (Cotton).
Atherton, A. T., Mach. Co., Pawtucket, R. I.
Howard & Bullough Am. Machine Co., Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Presses.
Boomer & Boschert Press Co., 338 West Water St., Syracuse, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Crawford J. J, & Son, Nashua, N. H. (Power Screw, Hydraulic, Hollow Steam Plate.)
Curtis & Marble Machine Co, Worcester, Ms
Hart, Charles, Frankford, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa
Phillips Co, The Thomas, Providence, R. I.
Printers (Fabrics and Yarn.)
American Yarn Printing Works, Philadelphia.
Pulley Covers.
Warren Co , The (Inc.), 34 Jackson St , Chicago, Ill.
Pulleys.
See Power Transmitting Machinery.
Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Rusden Machine Co., Warren, R. I.
Purifying & Filtration Plants.
Scaife, W B. & Sons, Pittsburg, Pa.
Rag Pickers.
Smith, Jas. Woolen Mach. Co., Phila, Pa
Raw Hide Gears.
New Process Raw Hide Co. Syracuse, N. Y
Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Leisenring, John Mfg. Co., Phila.
Loom Picker Co., Biddeford, Me.
Walder, J, Paterson, N. J.
Ribbons.
Barton, F. C., 54 Franklin St., New York.
Cheney Bros, S. Manchester, Ct.
Ring Travellers.
National Ring Traveller Co., Providence, R. I.
Morley Button Mfg. Co., Boston.
Roofing Asphalt.
Warren Bros. Co., 143 Federal St., Boston.
Roofing Materials (Manufacturers).
Warren Bros. Co., 143 Federal St., Boston.
Rope Transmission.
American Mfg. Co., New York.
Carpenter, Geo. B & Co., Chicago, Ill.
Dodge Mfg. Co , Mishawaka, Ind.
Durable Wire Rope Co., 178 Congress St Boston, Mass.
Link Belt Mfg. Co., Chicago, Ill.
Roving Cans.
Diamond State Fibre Co., Elsmere, Del.
Hill, James Mfg. Co., Providence, R. I.
N. E. Ventilating & Heating Co, 930 Manton Ave. Providence, R. I.
Laminar Fibre Co., No. Cambridge, Mass.
Walrus Fibre Mfg. Co., Medford. Mass.
Rubber Covered Rollers and Goods.
Boston Belting Co., Boston.
Saddles and Stirrups.
Dixon Lubricating Saddle Co., Bristol, R. I
Sample Cards and Mounting.
Merchants Sample Card Co., 33 Sullivan St., New York.
Scales
Sweet & Doyle, Cohoes, N. Y.
Schools.
American Correspondence School of Textile, New Bedford, Mass.
Georgia School of Technology, Atlanta, Ga.
New Bedford Textile School, New Bedford, Mass.
Lowell Textile School, Lowell, Mass.
Philadelphia Textile School, Phila, Pa.
Screens (Perforated.)
See under Perforated Metal.
Selling Agents.
See Commission Merchants.
Separators.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Draper Co , The, Hopedale, Mass.

Sewing Machines and Supplies.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch), Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Fales, L. F., Walpole, Mass.
Industrial Mfg. Co., Camden, N. J.
Manufacturers' Supplies Co., 66 No. 4th St., Philadelphia.
Rusden Machine Co., Warren, R. I.
Union Button Sewing Mch. Co., 164 High St., Boston.
Willcox & Gibbs S. M. Co., New York.

Shafting Hangers, Etc.
See Power Transmission Machinery.

Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Shell Rolls.
Cohoes Foundry & Mach. Co. Cohoes, N. Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Shoddies.
See Wool Shoddies.

Shuttles.
See Bobbins, Spools, Shuttles, Etc.

Silk Machinery.
Butterworth, H. W. Sons Co, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Knapp, C. H., Paterson, N. J.
Mason Machine Works, Taunton, Mass.
Rusden Machine Co., Warren, R. I.

Singe Plates.
Butterworth, H. W. Sons Co., Philadelphia.
Taunton-New Bedford Copper Co., New Bedford, Mass.

Singeing Machines.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch). Somerville. Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ma.
Granger Foundry & Machine Co., Providence, R. I.
Knapp, C. H , Paterson, N. J.
Rusden Machine Co., Warren, R. I.

Sizing, Starch and Gums.
Arabol Mfg. Co., 155 William St., New York.
O. K. Soap Co., 968 Franklin St., Phila.
Stein, Hirsch & Co, 165 Duane St, New York.

Sky Lights.
Drouve, The G. Co., Bridgeport, Ct.

Slashers.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Lowell Machine Shop, Lowell, Mass.
Phillips The Thomas, Co., Providence, R.I.

Soaps.
India Alkali Works, Boston, Mass.
O. K. Soap Co., 968 Franklin St., Phila.

Spindles.
Bamford & Smith, Pascoag, R. I.
Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Ward & Undergrift, Elmer, N. J.
Whitin Machine Wks, Whitinsville, Mass.

Spindle Tubes.
Bamford & Smith, Pascoag, R. I.

Spinning Cylinders.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Spinning Frames.
See Cotton Machinery.

Spinning Rings.
Draper Company, Hopedale, Mass
Whitinsville Spinning Ring Co, Whitinsville, Mass.

Spinning Tubes.
Buckley, Benj's. Son, Gun Mill, Paterson, N. J.

Spools. *See Bobbins, Spools Shuttles, Etc.*

Spool Cotton for Mfrs. Use.
Warren, W. Thread Works, Westfield, Mass.

Spooler Knotter.
Barber & Coleman, 504 Sears Bldg., Boston.

Sprinklers
International Sprinkler Co., Philadelphia, Pa.

Stamps for Hosiery.
Atlas Copper Stamp Works, 15 Whitehall St , N. Y.
International Mfg. Co., Brooklyn N. Y.
Tioga Stamp & Printing Block Co., 807 Venango St., Philadelphia.
Wells, Wilfred, 805 W. Lehigh Ave., Philadelphia.

Steam Boilers.
Babcock & Wilcox Co., The, 29 Cortland St., New York City.
Brown, C. H, & Co, Fitchburg, Mass.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.

Steam Engines.
American Blower Co., Detroit, Mich.
Brown, C. H, & Co, Fitchburg, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Hooven (The), Owens & Rentschler Co, Hamilton, O.
Rusden Machine Co., Warren, R. I.
Sturtevant, B. F. & Co., Boston.

Steam Surface Coverings.
Keasbey, Robert A., New York.

Steam Specialties.
Butterworth, H. W. Sons Co., Philadelphia.
Jenkins Bros., New York.
Rusden Machine Co., Warren, R. I.
Sturtevant Co., B. F., Boston.
U. S. Rocking Grate Bar Co., Elizabeth, N.J.

Steam Valves.
Jenkins Bros., New York.

Stop Motion for Looms.
See, also, Warp Stop Motions.
Tucker Stop Motion Co., Winsted, Ct.

Tanks, Tubs and Vats.
Caldwell Co., W. E. 202 Brook St., Louisville, Ky.
Cypress Lumber Co, Apalachicola, Fla.
Lewis, H. F. & Co., New Orleans, La.
Rusden Machine Co. Warren, R. I.
Stearns, A. T, Lumber Co, Neponset, Mass.
Woolford, George, 2240 No. 9th St, Phila, Pa.

Tapes, Braids and Edgings.
Barton, F. C., 54 Franklin St., New York.
Cathcart, John, & Co, 115 Franklin St, N. Y
Chapin, Geo. W Philadelphia, Pa.
Friedberger Mfg. Co, Germantown, Pa.
Krout & Fite Mfg. Co., Allegheny Ave. and Emerald St., Philadelphia.
Schneebeli, G. A. & Co., Nazareth, Pa.
Weimar Bros, 1817 East York St, Phila, Pa.

Telephones.
Mianus Electric Co., Mianus, Conn.
Plummer, F. O. 620 Atlantic Ave., Boston.

Temples.
American Loom Co., Readville, Mass.
Draper Co., Hopedale, Mass.

Tension Pulleys.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Tentering Machines.
See Dyeing, Bleaching Machinery, Etc.

Tenter Clips.
See Dyeing, Drying, Bleaching and Finishing Machinery.

Testing Machines.
Howard, Geo. C., 1783 Barker St., Phila., Pa

Textile Schools.
See Schools.

Thread Board for Spinning & Twisting Frames.
Houghton, L. T. & Sons, Worcester, Mass.

Thread Protectors.
Ring Frame Thread Protector Co., The, Amsterdam, N. Y.

Tickets and Labels.
Saranac Electrical Mfg Co. St. Joseph, Mich.

Towers.
Caldwell Co., W. E. 202 Brook St., Louisville, Ky.

Tower Clocks.
Howard E. Clock Co., 403 Washington St., Boston; 41 Maiden Lane, New York.

Turbine Governors.
Replogle Governor Works, Akron, O.

Turbines.
(See Water Wheels.)

Valves—Rubber.
Boston Belting Co., Boston, Mass.
Ventilating Apparatus.
Allington & Curtis Mfg. Co., Saginaw, Mich., 31 Wareham St., Boston.
American Air Moistening Co., Boston.
American Blower Co., Detroit, Mich.
Berry, A. Hun, 23 W. 1st St, Boston, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Drouve, The G. C ., Bridgeport, Ct.
New England Ventilating & Heating Co, Providence, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philapelphia.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
The Sterling Blower & Pipe Mfg. Co., Hartford, Conn.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.
Wall Whitening.
Moore, Benj. & Co, Brooklyn, N. Y.
Warp Stop Motions.
Am. Loom Co., Readville, Mass.
Draper Co., Hopedale, Mass.
Washers (Cloth).
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass
Butterworth, H. W. & Sons Co., Philadelphia.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R., & Son, Raritan, N. J.
Phillips Co, The Thomas, Providence, R. I.
Rusden Machine Co , Warren, R. I.
Watchman's Clocks.
Am. Watchman's Time Detector Co., Broadway, N. Y.
Eco Magneto Clock Co, 620 Atlantic Ave, Boston.
Howard, E. Clock Co., 408 Washington St., Boston, Mass., 41 Maiden Lane, New York.
Nanz & Co. 127 Duane St., New York.
Waterproof Floors.
Warren Bros. Co., 143 Federal St., Boston.
Water Purifiers & Filters.
Scaife, W. B. & Sons, Pittsburg, Pa.
Water Wheels.
Alcott, T. C., & Son, Mt. Holly, N. J.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.
Water Wheel Governors.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Leffel, James & Co, Springfield, Ohio.
Replogle Governor Works, Akron, O.
Winders. (Back.)
Taylor, Jas., 835 Arch St., Philadelphia.
Winder Bobbins.
Sweet & Doyle, Cohoes, N. Y.
Winders. (Hosiery.)
Altemus, W. W. & Son, Philadelphia.
Foster Machine Co., Westfield, Mass.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia.
Universal Winding Co, 95 South Street Boston.
Wood Pulleys.
Dodge Mfg. Co., Mishawaka, Ind.
Saginaw Manufacturing Co, Saginaw, Mich.
Wool Cleaning Compound.
India Alkali Works, Boston.
Wool Combing Machinery.
Leigh, Evan A. 35 Mason Bldg., Boston.
Wool and Waste Dusters.
Atlas Foundry and Mch. Co., Newark, N. J.
Gerry, Geo. & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Woolen and Worsted Machinery.
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Jefferson, Ed. & Bro, 28 Strawberry St, Phila, Pa.
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Leigh, Evan A. 35 Mason Bldg, Boston.
Lever, Oswald, Lehigh Ave. and Masecher St., Philadelphia. Pa.
Lowe, Stephen C., 186 Devonshire St., Boston. Agt. John Hetherington & Sons, Ltd.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave , Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Philadelphia.
Phillips Co. The Thomas, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Schofield, Geo. I., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.
Wool Shoddies.
Becker, Chas. W., Agt., Amsterdam, N. Y.
Slack, Wm. H. H., & Bro, Springfield, Vt.
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Banding.
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Warren, W, Thread Works, Westfield, Mass.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Cotton Mills, Lowell, Mass.

Cotton Yarns.
American Cotton Yarn Exchange, 67 Chauncy St., Boston.
Barnesville, Mfg. Co., Barnesville Ga.
British Cotton and Wool Dyers' Association, Ltd., 231 Chestnut St., Phila., Pa.
Buckingham & Paulson, 33 Leonard St., New York.
Catlin & Co. New York and Boston.
Charles, W. B , Amsterdam, N. Y.
Dana Warp Mills, Westbrook, Me.
Dexter Yarn Co., Pawtucket, R. I.
Dodds, J. S., 517 Wool Exchange, New York.
Eddy & Street, Providence, R. I.
Spring St., N. Y.
Eichmann & Sternberg, New York.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Indian Orchard Co., Indian Orchard, Mass.
Jenckes, E., Mfg. Co., Pawtucket, R. I.
Mitchell, Jas. E, & Co, Boston and Phila, Pa.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
Morgan, E. A., 54 Franklin St., N. Y.
New England Cotton Yarn Co , New Bedford, Mass.
Oraswell Mills, Fitchburg, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Cotton Mills, Lowell, Mass.

Cotton Yarns Wool Spun.

Broadbent, J. & Sons, Unionville, Conn.

Flax. Hemp. Jute and Ramie.

Fawcett, Hughes, 115 Franklin St., N. Y
Eichmann & Sternberg, 530 Broadway, N. Y.
Morgan, E. A., 54 Franklin St., N. Y.

Gassed Yarns.

British Cotton and Wool Dyers' Association, Ltd , 231 Chestnut St., Phila., Pa.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, New York.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
New England Cotton Yarn Co , New Bedford, Mass

Glazed Yarns.

Eichmann & Sternberg, 530 Broadway, N. Y.
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Lorimers, Wm. H. & Sons Co., Philadelphia.
Malcolm Mills Co, Frankford, Pa.
Montgomery & Co, J. R, Windsor Locks, Ct.
Morgan, E. A., 54 Franklin St., N. Y.
Warren, W, Thread Works, Westfield, Mass
Whittier Cotton Mills, Lowell, Mass.

Harness Twine.

Cranston Worsted Mills, Bristol, R. I.
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Moore, C., & Co., (S. W. cor. 5th and Market Sts.)
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Whittier Cotton Mills, Lowell, Mass.

Hosiery and Knitting Yarns.

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Boyer, B. F, & Co, Camden, N. J.
British Cotton and Wool Dyers' Association, Ltd., 231 Chestnut St., Phila., Pa.
Broadbent, J. & Sons, Unionville, Conn.
Cranston Worsted Mills, Bristol, R. I.
Dexter Yarn Co., Pawtucket, R. I.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Herbst, Albert & Co., E. Allegheny Ave., Philadelphia.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E., Manufacturing Co, Pawtucket, R. I.
Mitchell, James E, & Co, Phila. and Boston
Monument Mills, Housatonic, Mass.
New England Cotton Yarn Co., New Bedford, Mass.
Orswell Mills, Fitchburg, Mass.
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Skerry, A T, & Co, 47 Leonard St, N. Y.
Walcott & Campbell Spinning Co, New York Mills, Oneida Co. N. Y.
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Whittier Cotton Mills, Lowell, Mass

Mercerized Yarns.

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Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimer, Wm. H. & Sons Co , Philadelphia.
Montgomery, J. R. & Co., Windsor Locks, Conn.
Morgan, E. A., 54 Franklin St., N. Y.

Mohair Yarns.

Cranston Worsted Mills, Bristol, R. I.
Goff, D. & Sons, Pawtucket, R. I
Skerry, A. T, & Co., 47 Leonard St., N. Y.

Novelty Yarns, Tinsels, Silk Noils, Etc.

Cranston Worsted Mills, Bristol, R. I
Eichmann & Sternberg, 530 Broadway, New York.
Indian Orchard Co., Indian Orchard, Mass.
Malcolm Mills Co, 229 Chestnut St, Phila, Pa.
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Skerry, A. T, & Co, 47 Leonard, St, N. Y.

Silk Yarns.

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Eddy & Street, Providence, R. I.
Eichmann & Sternberg, 530 Broadway, New York.
Mason, Dan'l, Voorhis Mill, Paterson, N. J.
Ryle Wm, & Co, 54 Howard St, N. Y.

Woolen and Merino Yarns.

Boyer, B. F, & Co, Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Eddy & Street, Providence, R. I.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
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Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Skerry, A. T, & Co, 47 Leonard St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.

Worsted Yarns.

Alleghany Worsted Mills, Phila, Pa.
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Campion, Richard, 17 Bank St., Philadelphia.
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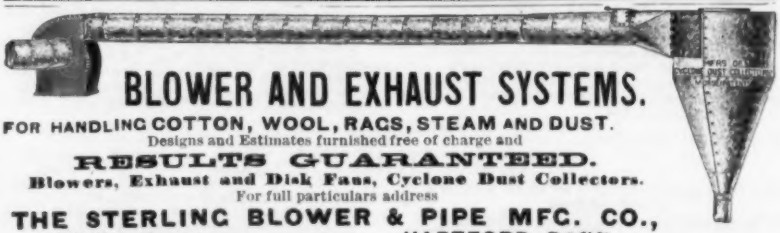

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WANTED.

Foreman of a small Massachusetts Knitting Plant not yet in operation, who thoroughly understands the manufacture of cotton and woolen hosiery in all its details from the gray yarn to the finished product, and who is not afraid to work at fixing when necessary. Should prefer married man, 30 or 35 years of age. State past experience and salary expected, with references. Address "G. P. T.," care Textile World, 620 Atlantic Ave., Boston.

Thread Manufacturer.

Has had extended experience as superintendent or manager as a thread maker of all qualities of spool cotton, 6 cord soft finish. Am an expert on 2, 3 and 4 ply glazed sewing thread. Apply "J. M." care Textile World, 620 Atlantic Avenue, Boston.

WANTED.

A good secondhand set of 48 inch Davis & Fuber cards with D. & F. mule to follow.
ALMONTE KNITTING CO., Ltd.,
Almonte, Ont.

IF YOU WANT COTTON OR WOOLEN MACHINERY

...Why not correspond with...

GEO. L. SCHOFIELD,

123 No. Front Street,

PHILA., PA.

Also, Agent for the Weston Hydro Extractor.

FOR SALE!

150 KNOWLES LOOMS

NEARLY NEW

40-inch reed space, 4 x 4 box, 25 harness, ready to run with no additional cost, perfectly equipped.

BENJ. W. GREER,
Bellevue Worsted Mills . . Germantown, Phila.

CARD CLOTHING

A renowned German firm of CARD CLOTHING MAKERS seeks respectable firm of agents for Cotton and Worsted Card-Clothing, also, Clothing for Napping Machines. First-class references required and given. Apply to KRATZEN, care of Textile World, Boston, Mass.

Of Interest to Worsted and Woolen Superintendents.

A man experienced on worsted and woolen goods and who commands a little capital can obtain sufficient floor space and power for about 20 looms and the necessary finishing machinery; situated in the building of a worsted yarn mill in a large Massachusetts city. Power and rent very low to the right parties. "Worsted & Woolen," care of Textile World.

New England Salesman Wanted.

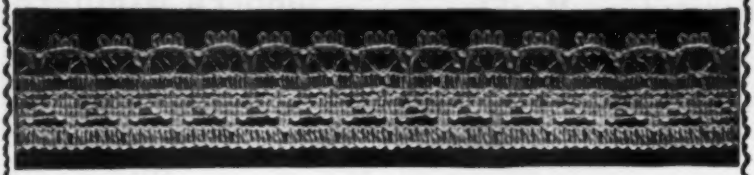
A salesman is wanted for New England who is familiar with the cotton mills, to introduce and apply an improvement in connection with spinning. Address "Section," care of Textile World, Boston, Mass.

BOSS KNITTER WANTED.

One who understands Lamb knitting machines, ribbers and hosiery machines. State age, salary and reference. Good position to right man; steady employment. Address "Dearborn," care Textile World.

GAUZE WANTED.

Geo. H. Cook, 78 Chauncey St., Boston, Mass., would like quotations from a Southern mill on plain cotton cloth, 36 inches wide, 48 x 48 and 56 x 54.



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Edgings and Braids

For Knit Underwear.

New patterns constantly originated embracing every design possible to make.

Monthly production 30,000,000 yards.

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(Selling Agent.)

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SITUATIONS WANTED.

The advertisers in the following columns should be addressed in care of TEXTILE WORLD or inquiries concerning them may be addressed directly to "Information Department TEXTILE WORLD," as full particulars of each advertiser are on file, and the addresses of suitable agents, superintendents and foremen for every branch of the textile industry will be furnished to manufacturers.

Any subscriber may file his application, and no charge is made until position is secured.

The business of this department is held strictly confidential.

The applications of good overseers in every department, who are in want of positions are solicited.

Manufacturers are invited to use this department when in need of skilled men; each case will be handled confidentially, with promptness and judgment, and without charge to manufacturers.

WOOLEN SUPERINTENDENTS.

1829 **Woolen Supt.**, or asst. or dyer. Age 35; American; married. Has worked on kerseys, coverts, worsteds, cassimeres, etc. Is familiar with Davis & Furber jackets and mules, and Crompton & Knowles.

1916 **Agent or Supt.**, who understands designing and also the work of every department, is open to a position. Has been a superintendent for the last 15 years, and is thoroughly competent to take charge of a large mill. Scotch-Irish; 38 years old; married. Has turned out all classes of woolen and worsted goods in all wool and in wool substitutes. Is well up in the mixing and blending of stocks. References of the best.

1890 **Manager or Supt.** of a woolen mill, who understands designing, is open to an engagement. 34 years old; Scotch, and single. Large experience in Scotch and Canadian mills on tweeds, worteds, overcoatings, etc. Good references.

1891 **Supt. of Woolen or Worsted** Mill, who understands designing, is open to a position. 23 years of age; an American; single. Well recommended, and with good experience.

1823 **Supt., Designer or Overseer** of weaving. Age 44; English; married. Large experience on fancy cassimeres, cloakings, beavers, meltons, plaid backs, golf caps, rugs, union worsted suitings and government work, flannels, face-finished goods, and can make them up from the yarn. Is familiar with Crompton & Knowles and English looms.

1398 **Woolen Superintendent or Designer** of recognized ability and at present employed as a superintendent of 36 set woolen and worsted mill. He finds it necessary to remove from New Jersey on account of his wife's health. His past record is first-class and this is an unusual opportunity to secure the services of a first-class superintendent.

1575 **Assistant Supt. Woolen.** A graduate of the Philadelphia Textile School (highest standing), and has had more than 7 years' experience in the various departments of a Massachusetts mill. Wants to get a start where there is fair chance of advancement. Age 28, single.

1924 **Assistant Supt.**, boss weaver and boss dresser desires a position in a woolen mill. 39 years of age; an American; married. Has worked on all classes of woolen goods on both English and American machinery. Good references from former employers. 15 years' experience.

COTTON SUPERINTENDENTS.

1877 **Agent or Treasurer.** Good references. Recently assistant manager of a large mill. Fully competent.

1806 **I would like** to correspond with some president or manager of some cotton mill now running or any new mill now being constructed, who would like to engage a competent superintendent. I want to engage with a cloth mill of any number of spindles not exceeding 10,000. My price is $1,000 a year, with no loss of time. I am a practical manufacturer, of long experience as overseer and superintendent. I am a good manager, full of push and energy, and I have a good record as a hustler for big productions and making money for my employers. Strictly temperate.

1918 **Supt. of Cotton Yarn** or plain cloth mill is desirous of obtaining a position. Is a native of Georgia; 29 years old; married. A splendid manager of Southern help and has worked in every department of a cotton mill on all good makes of machinery. Can refer to several large cotton mill owners.

1867 **Assistant Manager** who understands the handling of cottons and linens, desires position in a cotton mill. 24 years of age; American; unmarried. Can satisfy anyone in regard to references, experience, etc.

1806 **Supt. of a Cotton Weaving Mill**, colored or white, 5,000 to 10,000 spindles; or overseer of weaving in a cotton mill, on any kind of work and any size mill, white or colored. Will go East, West, North or South, Canada or Mexico. Has had good and long experience. A married man; 40 years old, strictly temperate. Can give references as to ability and character.

1527 **Supt. of Cotton Mill**, or overseer of mule or ring spinning is open to a position; 16 years experience in Northern mills, on yarns, denims, awnings, apron checks, bicycle suitings, shirtings, etc. etc. Familiar with all well-known makes of cotton machinery; 29 years old; American; married. Can give references from large Massachusetts mills.

1898 **Cotton Supt.**, 33 years old, married, and an American, experienced on coarse and fine yarns and white goods, is open to a position. Conversant with all standard makes of cotton machinery. Can refer to prominent Mass. men in the cotton trade.

1896 **General Manager** and Superintendent of cotton mill desires position; 37 years old; single; English. 18 years' experience on yarns, flannelettes, denims, grays, and shirtings. Good references.

WOOLEN CARDERS.

1798 **Boss Carder,** or carder and spinner. Age 49; English. Large experience on fine, medium and coarse wool, also wool, cotton and shoddy mixes, cassimeres, flannels, blankets, kerseys, meltons, beavers, government goods, etc. Excellent references and first class man in every respect. Was nine years boss carder in England and has held good positions in this country as boss carder and spinner.

1899 **Worsted Carder,** 9 years in large mill in Lawrence, would like a position; 23 years old; English; single. Has worked on almost all grades of stock, and understands all well-known makes in worsted cards. Good references.

1903 **Boss Carder,** woolen or worsted mill, desires a position. Experienced on fine and coarse work; 27 year of age; American; married. Can refer to responsible parties Moderate wages desired. Will go to any part of United States.

1827 **Overseer of Woolen Card** Room. Has worked on blankets, robes, friezes, cheviots, kerseys, flannels, knit goods, cassimeres, hair lines and unions. Age 34; American; married. Wants not less than $3.00 per day.

1660 **Overseer of Woolen Carding** Does not want to go out of N. E. States. Age 48; American; married. Many years' experience as overseer and has excellent references. Has worked on nearly every class of goods manufactured in N. E., and is familiar with nearly all machinery.

COTTON CARDERS.

1886 **Overseer of Cotton Carding;** 31 years of age; married; of English parentage; desires position in the Middle, Atlantic or New England States. Familiar with Lowell, Pettee, Biddeford, Woonsocket, Whitin, Mason and all makes of pickers of above machinery. Good references.

1893 **Boss Carder of Cotton.** 38 years old; married; an American; who can also handle a weave room of from 300 to 500 looms, wishes to make a change. Has had over 15 years' experience in New England mills. Best of references.

1919 **Overseer Cotton Carding and** Spinning, who has had an experience of over 10 years in N. E. and New York mills, is open to a position. 26 years old; American; single. Thoroughly competent and reliable. Best of references.

1884 **Overseer of Cotton Carding.** 42 years old; French; married; desires a position in any mill north of Pennsylvania. Long experience in several large New England mills. Familiar with all makes of English and American machinery. Best of references. Has one son in family, third hand in card room.

1759 **Overseer of Carding Room.** Age 26. Has worked on fine and coarse yarn, and understands all makes of machinery in carding Good manager of help by speaking different languages. At present overseer in a small mill. Excellent reference as to character and ability. Wants from $3.00 to $3.50 per day.

1929 **Overseer** cotton carding and spinning is open to a position in any part of U. S. Age 31; German; single. 12 years' experience as overseer carding in important cotton spinning mills in France, Germany, Bohemia and Italy. Specialty of Egyptian and American combed fine yarns. Best of references.

WOOLEN WEAVERS.

1645 **Overseer Weaving.** Age 30; married, American. Has worked in weave room since he was 17 years old as weaver, fixer and secondhand of weaving, except for a short time was traveling salesman. Has worked on ladies' dress goods, men's fine worsted suitings, overcoatings, cloakings, etc., on Crompton & Knowles and Jacquard looms. Excellent references.

1878 **Woolen** Overseer of Weave room. American; married. Very large experience in New England mills, on union cassimeres, chinchillas, dress goods, meltons, kerseys, fancy woolen suitings, and government goods, also fine fancy worsted suitings. Knowles & Crompton looms. A 1 references.

1482 **Weaver or Wool Sorter.** Has worked on cassimeres, cheviots, tricots, kerseys and cloakings. Good references.

1688 **Overseer of Weaving** in large mill, designer in small mill, or assistant designer in a large mill. Age 38; German; single. Has worked on beavers, chinchillas, fine cassimeres, fine fancy worsteds, ladies' dress goods, army goods, union cassimeres and other classes of goods. Strictly temperate and industrious.

1805 **Boss Weaver.** Has worked on fancy dress goods, cashmeres, ginghams, fancy worsteds, coatings, lenos and Jacquards. Has also some knowledge of designing. English; age 36.

1922 **Boss Weaver or Loom Fixer** on Crompton & Knowles looms, 48 years of age, English, married, desires a position in the West or South. Is thoroughly experienced on cassimeres, flannels and jeans. Good references from large Western mills. One worker in family who can grind and keep shears in good repair.

COTTON WEAVERS.

1806 **Wanted a Situation** as Boss Weaver or Second Hand, on any kind of plain weaving in cotton, wool, or jute mill. Has had 10 years' experience as boss weaver and 15 years experience as second hand and loom fixer. Am a married man, sober, steady, a good manager of help and a hustler for good productions. Can give good references as to ability, sobriety, and character. Will go to any part of U. S., Canada or Mexico.

1235 **Overseer of Cotton Weaving,** with long experience in large Eastern cotton mills, is open to a position. Has handled prints, twills, sateens, lenos, cheviots, dress goods, and also Jacquard cloths. Thoroughly understands Lowell, Crompton & Knowles, Whitin and English looms. 37 years of age; American; single. Best of references from former employers.

1879 **Overseer of Weaving** or Assistant Supt. 17 years' experience in New England cotton mills, having charge of 1300 looms for 6 years recently. Fine and coarse goods on all well known machinery. Best of references.

1826 **Wanted by Steady, Industrious** man, a situation as overseer, in Tape mill. Has had considerable experience, but does not know everything, but willing to improve. $2.25 per day. Has been overseer a short time, and has perfect control of help. Age 46; English; married. No family. Would go anywhere, and settle.

WOOLEN SPINNERS.

1927 **Overseer Spinning**, carding or flyers. 37 years old; married, and can furnish best of references. Twenty-three years' experience. A German.

1784 **Worsted Drawer and Spinner.** Would take twisting. Age 2-; English; single. Can furnish references as to ability and character.

633 **Woolen Mule Spinner** desires to move from Maine on account of wife's health. At present in good position. Age 37; married, Scotchman.

1862 **Overseer of Spinning.** Is used to Johnson & Bassett, Davis & Furber and Campbell & Clute machines. Has had 18 years' experience as an overseer. Is a handy man, and can give good references. Wool, cotton and mixtures.

1912 **Boss Worsted Spinner** on cop and flyer frames, who is also familiar with spooling, reeling, skein winding and dressing, is open to a position. Thirty-three years old; American and single. Has had 19 years' experience in one of the largest worsted mills in N. E., making yarns from 1 ⅛s to 56s from domestic and foreign wools. Has also handled mohair and camel hair. Good references.

1917 **Overseer Woolen Spinning.** Is thoroughly competent to take charge of a large spinning room. 38 years old; French; married. Has spun yarns for flannels, tweeds and knit goods, also cotton and wool mixes, shoddies, ranging in all from ⅛ to 14 runs. Is familiar with Davis & Furber, Johnson & Bassett, Platt and other makes. Very satisfactory references.

COTTON SPINNERS.

1068 **Overseer of Frame Spinning.** Twisting, Spooling and Warping desires position and would accept that of second-hand. Has worked in some of the best mills in N. E. (37 years old, an American and single) on Nos. running from 4s to 80s. Is familiar with Whitin, Mason, Biddeford and Lowell machines. Will go to any of the N. E. or Middle States. A1 references, and does not expect a fancy price.

1869 **Overseer or Second Hand** of ring spinning, cone winding, twisting, spooling, cop winding, reeling. 27 years of age; American; single. Of good experience on fine and coarse cotton yarns. Competent and reliable and used to handling all the well known makes of machinery. Will go anywhere. Good references.

1915 **Overseer of Ring Spinning**, or carding, would like a position in a cotton mill. Is familiar with fine and coarse yarns and almost all Amer can machinery. An American; 33 years of age; married. Best of references.

1753 **Overseer of Spinning** wants position in the South. Has worked on prints, flannels, sheets, colored double nap flannel dress goods. Age 28; married; American. Excellent references from past employers.

DESIGNERS.

1445 **Designer or Finisher**, or will take position as supt. of a small mill. German; Protestant; age 36; married. Has worked in several New England mills, and refers to them. Graduate of the Werden Textile School, Saxony. Has worked on kerseys, beavers, cassimeres, cheviots, etc. Is familiar with all makes of American and German machinery.

1838 **Designer**, assistant supt., assistant designer, overseer of weaving, secondhand large weave room, loom fixer, boss spooler, dresser, or mender. Age 46; American; single. Worked on worsteds, cassimeres, dress goods, blankets, chinchillas, cloakings, etc. All patterns of Crompton & Knowles looms, Davis & Furber spooling, dressing and weaving machinery, and Worcester warp compressor.

1599 **Assistant Designer.** A young man who is studying woolen and worsted designing would like an opportunity to get practical experience, and will accept very small wages. Has worked in mill for two years as weaver on Crompton & Knowles looms. Excellent references as to character.

1685 **Boss Dresser or Assistant Designer.** Has taken a thorough course in designing, and is well up in calculations and in the making of fancy men's wear goods of all kinds. Has worked in Scotland and three years in this country. His knowledge of yarn calculations and practical experience as dresser tender makes him well fitted to fill a position as boss dresser and to run a room in an up to date and efficient manner, or to fill a position as designer or assistant.

1923 **Assistant Designer** on woolen or worsted dress goods and suitings is open to a position. Age 21; American; single. A graduate of one of the largest textile schools in the country, and has had experience in a good New England mill. Also understands flannels and satinets. Good references.

1888 **A German Designer**, who understands all machinery necessary for the manufacture of men's wear, woolen or worsted, is open to a position at $3000 per year. Eight years' experience in Germany and five years' in one of the largest mills in the United States. 33 years of age, and single. Best of references.

1897 **A Young Man**, 28 years of age, competent to handle the designing for a cotton or silk mill, would like a position. Has made in cotton, plain, fancy and leno; in silk, tie silks, dress goods and linings. Looms all well-known makes. Is Scotch, and single. 14 years' experience in weave room and designing room. Good references from N. J. and Conn. mills. Four workers in family—weavers.

1837 **Designer** in small mill, or assistant in large mill. Age 24; Scotch; single. Has worked on fancy cassimeres, plaid backs, coverts, unions, worsted trouserings and shirtings. Fair knowledge of Jacquard designing. Johnson & Bassett mules, Davis & Furber dresser, and Knowles looms. Is willing to work for moderate salary, with chance of promotion.

1789 **Designer**, or assistant supt. and designer. An A1 color designer. Can get up good line of fancy woolen and worsted goods which will be good sellers and profitable to the manufacturer. Graduate of a prominent designing and textile school in Germany. Is well posted on all kinds of stock, cotton and shoddy, and with the general work of a woolen mill.

KNITTERS.

1925 **Boss Knitter** and sewing machine fixer, who thoroughly understands ribbed underwear, will be open to a position shortly. 33 years of age; American; single. Has given good satisfaction in large mills in New York State. Prefers Pennsylvania or New York State.

1926 **Boss Knitter.** 35 years of age, American, married, desires a position. 15 years' experience on underwear, astrakhans, stockinets, rubber linings, Jersey cloth, fleece linings, elderdowns, etc. Good references from large knitting concerns where he was previously employed.

1777 **Overseer of Knitting.** Has worked on ladies' and infants' underwear. Standard makes of machines. Will not change for less than $18. Age 33; American. Refers to past employers.

1906 **Supt. or Agent** of a hosiery mill is open to a position. Thoroughly understands spinning, dyeing and is familiar with all well-known makes of knitting machinery. American; 2[illegible] years old; single. Has been superintendent for the last seven years in a large plant. Best of references.

1744 **Fixer.** Age 24; American; married. Is familiar with Boss, Invincible, McMichael & Wildman, Brinton, Denny and Victor machines. Wants $15 a week.

1905 **Boss Knitter,** age 26 and married, with six years' experience on all kinds of Jersey ribbed knit ladies' under wear, would like to secure a position as foreman knitter in a small mill in Pennsylvania, or as assistant in a large one. Practical experience on Nye & Tredick, Stafford & Holt, McMichael & Wildman, Brinton and Champion rib machines; understands all kinds of sewing machines and repairs, also boilers and can run them on economical plan. Can do machine repairing in general, having had early training as machinist. Is strictly temperate, and can give references.

1831 **Boss Knitter** on circular latch needle machines, making ribbed underwear, or spring needle work made on Tompkins machine. Also a practical wool carder of about eight years' experience as overseer in underwear and shoddy mills. Understands raw stock and how to handle it so as to give best results. An American, steady and reliable. Age 36.

1554 **Boss Knitter.** Underwear, Jersey ribbed, lisle, wool, plaited work, silk Can handle any latch machine. Good references. Age 26; married.

1824 **Boss Knitter or Fixer** on ribbed underwear. Has worked on fancies, double knees and tops and plain work. Is familiar with Brinton & Denny, McMichael & Wildman, Huse and Pepper machinery Will work for $2.50 or more, according to position.

1776 **Boss Knitter.** Had constant experience in the knitting business for the past twenty years. Can handle any kind of goods made on a circular spring needle knitting machine. Age 36; American; married. Excellent references.

1920 **Supt. of Glove Factory** or knitting mill who understands the making of fabric gloves of silk, cotton, cashmere, and also knit gloves and mittens. 44 years of age; German; married, and has four workers in family, who understand glove sewing, pointing, etc. Has held responsible positions, and is a good manager. Can refer to some large establishments in New York and Chicago.

FINISHERS.

1792 **Boss Finisher,** with over 20 years' experience on all kinds of woolen and worsted goods. Learned business in one of the best woolen mills in Scotland and has also had experience in some very good mills in this country. Strictly temperate and steady, and can give good references as to character and ability. Wants position in a good, steady-running mill at once. Age 38 years; married.

1887 **Overseer of Finishing** in a cotton or worsted mill, having several years' experience on cotton flannels, shirtings, blankets, crashes, cotton and worsted dress goods, and carriage cloths, is open to a position. 25 years of age; American; married, and strictly temperate. Will go to any part of the United States, except West. Best of references.

1902 **Overseer of Finishing,** 16 years' experience on woolens, worsteds and cottons, would like a position in Mass. or R. I. mill. 42 years old; American; married. Two boys in family who can run shears and press. Good references.

1900 **Boss Finisher** of men's wear, ladies' dress goods, worsteds, cassimeres, kerseys, cotton and woolen mixes, who has gained his experience as finisher in some of the large English and American mills, is open to a position. Is familiar with all standard makes of finishing machinery; 48 years of age; Scotch; married. Can refer to well-known men.

1909 **Boss Finisher** of worsted, woolen and cotton dress goods, and an expert examiner, would like a position. 25 years old; English. Long experience, and can refer to some of the largest finishing establishments in the East. One worker in family.

1770 **Overseer of Finishing,** or would take secondhand position in large mill. Age 35; married; American. Cassimeres, cheviots, kerseys, meltons, chinchillas, dress goods and cloakings. Is familiar with all makes of machinery in woolen mills.

1771 **Boss Finisher,** or would take good secondhand position. Has worked on all classes of goods. Age 53; Scotch; married. Reason for his wishing to change is on account of mill where he is now employed not running steadily

1437 **Overseer of Finishing** desires a position in a woolen mill. Is familiar with chinchillas, kerseys, cassimeres, dress goods, casket cloths, worsteds, etc.; 33 years of age and single; steady and industrious, and can give good references.

1911 **A Boss Finisher** of over 20 years' experience on cassimeres, flannels, dress goods, cloakings and worsteds, is open to a position. Understands Parks & Woolson, Curtis & Marble, Hunter, Miller Press Co., Rodney Hunt and other machines. Married; 44 years old, and can give good references. Over 15 years in last place.

1921 **Boss Finisher** of a satinet mill or secondhand of a woolen mill, would like a position. Has held these positions in good sized mills, and is familiar with satinets and woolens. 23 years of age; American; single. Good references as to steadiness, reliability and quality of work.

1716 **Finisher.** Age 29; English; married. Has worked as wet finisher-shearer, gigger, second-hand and overseer. Prefers a mill making cassimeres, worsteds, dress goods and face finished goods. A high grade of goods. Is familiar with all kinds of American and English finishing machinery, and can keep same in the best of repairs. Prefers Eastern States. Can take position at one week's notice. Best of references.

DYERS.

1846 **Boss Dyer** or Bleacher. Age 28; English; married. Has worked on mostly all kinds of dyed and bleached goods. Understands indigo blues and alizarine colors for bleaching and fulling purposes on cotton goods. Wants to change as place he is in does not agree with him.

1303 **Manager of Dye Works**, or boss dyer, who has been connected with some of the largest dye houses both in England and the United States is open to a position. Understands piece dyeing of all kinds, cotton, wool, mohair and alpaca; pile fabrics; knit goods, wool and cotton; yarns, wool, silk and cotton; raw stock; and wool and merino shoddies Is 36 years old; English; married. Good references from a number of prominent men in the textile industry.

1839 **Boss Dyer**, English, age 35, married. Has been boss dyer for 14 years in this country and England on all classes of woolen and cotton warp goods, such as satinets, cloakings, and shoddy, and is well up in dyeing light shades out of dark stock. Understands worsted piece dyeing, raw stock and worsted yarn. Steady and reliable, and best of references. Would work for fair pay.

1913 **Boss Dyer** or secondhand, who has had over 23 years' experience in large woolen mills in N. E., is open for a position. 44 years of age; married. Is familiar with cotton, woolen and worsted yarn dyeing for cassimeres, dress goods and trowserings; also piece dyes and raw stock. Best of references.

1908 **Boss Dyer and Bleacher.** Age 23; American; single. Now employed, but will change for good job. Best of references from present employers.

1894 **A Competent** cotton dyer, experienced on long chain, short chain, skein yarn, and raw stock, is open to a position. Age 48; Scotch: married. Will accept reasonable wages. Has good references.

1883 **A Boss Dyer** who understands cotton and wool raw stock dyeing, piece dyes, knit goods, and has had large experience on cotton skein yarns for the webbing trade, is open for a position. 34 years old; married, and an American. Will accept a reasonable salary.

1860 **A First-Class Boss Dyer** wants position. 50 years old; German; single. Has managed some large New England dye houses and is familiar with worsteds, woolens, mohairs, knit goods, pieces, yarn, slubbing, loose wool, carpet yarns and cotton yarns Will go anywhere and can give references that will satisfy anyone as to his ability.

1846 **Boss Dyer** or bleacher. Age 28; English; single. Has worked on mostly all kinds of dyed and bleached goods. Wants to change as place he is in does not agree with him.

1928 **Overseer of Dyeing**, 28 years of age, American, single, would like a position in a New England mill or in the Middle Atlantic States. Eight years' experience on wools, shoddies, raw cotton and cotton yarns, piece dyed kerseys, beavers and carriage cloths. Good references from large Eastern mills. Salary moderate.

MISCELLANEOUS.

1826 **Wanted by Steady, Industrious** man, a situation as overseer, in Tape mill. Has had considerable experience, but does not know everything, but willing to improve. Would start at $1.25 per day for six months. Has been overseer a short time, and has perfect control of help. Age 46; English; married. No family. Would go anywhere, and settle.

1762 **Chemist.** Age 23; American. Wants a position in dye works, print works or bleachery. $15 a week to start on. Excellent references.

1835 **Beamer, Twister,** also understands drawing in and splitting. Age 27; American. Has worked on ginghams, dress goods, shirtings and cotton worsted.

1851 **Machinist in Woolen Mill.** Can repair looms, cards, mules, etc., of every description, also worsted machinery. Understands forging tools and has fair knowledge of electricity. Ten years experience in some of the best mills in New England.

1873 **Wanted** situation as Master Mechanic in cotton corporation. Has had large experience. Middle aged; strictly temperate. A graduate of a technical school. Learned carpenter's trade and machinist's.

1895 **Shipping Clerk** and Bookkeeper, familiar with mill office work, would like to take a position as such in any part of United States. 21 years of age; single; an American. Best of references.

1865 **Machinist and Fixer.** Has had eight years' experience. 24 years old; English; single Is thoroughly familiar with Singer, Wheeler & Wilson, Merrow, Union Special, Lamb, Pepper, and Hepworth and Beattie loopers

1873 **Master Mechanic** in cotton corporation. Has had large experience. Middle aged; strictly temperate. A graduate of a technical school. Learned carpenter's trade and machinist's.

1866 **Overseer of Burling** and Sewing of Cloth Examiner in commission house. Have had 25 years' experience in the cloth room and can handle any class of woolens or worsteds, either dress goods or men's wear. 41 years old; Irish; married. Best of references. Have a son 19 years old who is a percher and brusher.

1914 **A Young Man** who thoroughly understands the keeping of mill books would like a position in the Southern States or would go to Cuba or Puerto Rico. Is a first-class man and perfectly familiar with general office work. An American; 22 years of age; single. Steady and reliable, and can give good references.

1910 **Loom Fixer** on Knowles, Crompton, Stafford, Whitin, Mason, Colvin and other looms, would like a position. Has made golf cloths, plaid backs, fancy dress goods, viennas, kerseys, etc., also cotton lenos, lappets, novelties and plain goods. American; 38 years of age and single, steady and reliable, and can give satisfactory references.

1473 **Overseer Steam Gigging and** Rolling. Has worked for many years in large mills. Would accept $2.50 a day at start. Age 33, married.

1489 **Boss Finisher.** Second-hand or Boss Shearer. Well experienced; excellent references. English; age 27; single.

SLIPPING BELTS

GO ON WASTING YOUR POWER—YOUR MONEY—
HOUR AFTER HOUR, EVERY DAY THEY RUN

WARREN'S PULLEY COVER

will stop this waste.

We will send you Warren's Pulley Cover on 30 days' trial. You pay for shipment if found satisfactory; if not, hold subject to our order and we will refund express charges.

Regular Case, 125 sq. ft., $12.00
Special " 40 " " 5.00

With brushes and full instructions for application.

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Morse Lamp Adjuster.

is the only automatic adjuster on the market that has received written approval of every expert that it has ever been shown to, and which can be attached or detached in a minute and operated in a second's time. Every Mill, Factory and Shop should have them.

Send for Illustrated Price List and Trade Discounts.

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116 Bedford Street,
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Established 1844.

BENJ. BUCKLEY'S SON,

(WM. J. BUCKLEY)

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Manufacturer of all kinds of

SPINDLES, FLYERS, RINGS, TUBES, CAPS, &C.

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Cotton, Silk, Flax, Woolen and Worsted

MACHINERY.

Roving Spindles and Flyers a Specialty.
Light Forgings. Repairing of all kinds.

How do you Store your Oil?

For economy, durability, safety and convenience, nothing equals the Wiley Patent Safety Oil Cabinet. Approved by underwriters. For sale by all Mill Supply Houses or write to

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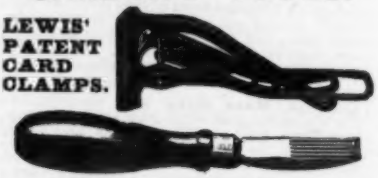

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ATHOL, MASS.

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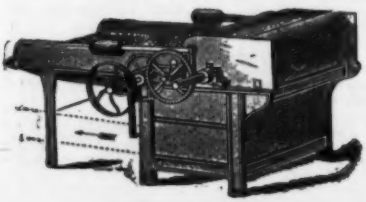

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RAG DUSTERS, NAPPERS,
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Lumper and Duster Cylinders Refilled and Repaired.

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Plans and Specifications furnished for the Construction and Equipment of Cotton Woolen and Carpet Mills, Bleacheries and Dye Works.
Praray's Improved Construction for Mills, Etc., a Specialty.
Old Mills Re-organized and Extended.

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ESTABLISHED 1876. Dealer in
TALLOW, GREASES, OILS,
Caustic Soda Ash, Palm Oil, Olive Oil, Bleaching Powder and Heavy Chemicals.
Also a Full Line of Soap Makers' Materials.
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Textile Mills

May be had at points on Southern Railway

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THE SEABOARD
AIR LINE RAILWAY
"CAPITAL CITY ROUTE."
SHORTEST AND QUICKEST LINE
TO THE
Principal Cities of the South and Southwest
INCLUDING
Athens, Atlanta, Augusta, Macon,
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AND TO
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It enters the CAPITALS of all the SIX STATES which it traverses in addition to the NATIONAL CAPITAL.

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Selling Jobbing Trade Exclusively.

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Manufacturing Cottonades, Cheviots, Sheeting, Shirting, Drilling, Duck, Kerseys, Plaids, Tickings, Hosiery, Towels, Seine, Twine Cotton Batting, Knitting Cotton, Ball Thread, Wrapping Twine.

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WILLIAM B. CHARLES,

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Successors to FLEMING & CHAPIN.

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COTTON YARNS of all Descriptions.

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Cash Advances, Cash Sales and Prompt Returns. Consignments and correspondence solicited.

Eddy & Street,

COTTON, **YARNS** WORSTED,

WOOLEN, AND SPUN SILK.

BRAIDS

PROVIDENCE, R. I.

DAN'L MASON,

Voorhis Mills, PATERSON, N. J.

BUYS JOB LOTS in colored and raw

SILK YARNS.

Cash Advances on Sales and Prompt Returns.

RICHARD CAMPION,

Selling Agent for—

Bristol Worsted Mills,

Highland Worsted Mills.

17 Bank Street, Philadelphia, Pa

Knitting and Weaving Yarns

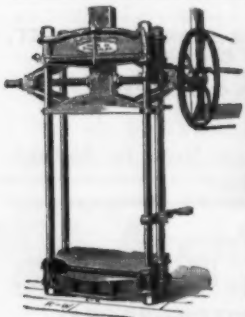
Cones, Cops, Warps, Skeins,

Single, Double, Three-ply, etc.

Peeler, Egyptian, Mixed Colors.

Large Assortment.

EDWARD S. HYDE, 223 and 225 Chestnut Street, Philadelphia, Pa.



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ALL KINDS OF Spindles USED IN THE MANUFACTURE OF COTTON, WOOL & SILK

IMPROVED UPRIGHT SPOOLERS TO SPOOL FROM COP, SKEIN, OR BOBBIN.

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Mohair and Worsted

YARNS.

Mohair Plushes,
Worsted and Cotton Braids.

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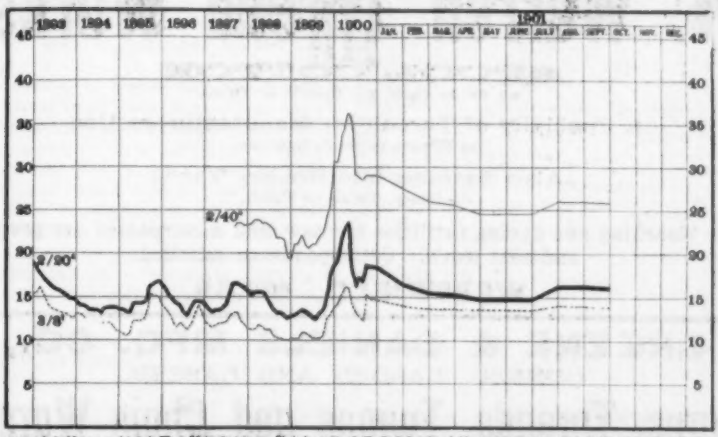
YARN DEPARTMENT.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

Cotton Yarn.

The market for cotton yarn is dull. The knitting trade is in bad shape, and this condition of affairs is reflected in the movement of yarn.

Prices are somewhat weaker than at our last writing, but this is more marked in cases where buyer and seller are dealing in stock goods.

Where a special size or quality is desired which does not happen to be in stock, something like a fair price can be secured.

The trade is still suffering from the mad rush to spin yarn which occurred in 1899 and 1900. It will be found that a recovery from the effects of such an abnormal production of goods is slow and tedious.

Knitters and weavers have apparently resolved to carry small stocks. This results in throwing the load on the spinners' shoulders, who in turn must adopt a similar policy if healthy conditions are to return. Prices are nominal and irregular; in many cases they are below the cost of production at today's quotations for cotton.

Philadelphia Cotton Yarn Market.

The yarn market is in a very unsatisfactory condition for spinners of both weaving and knitting yarns. Prices seem to be based on getting cotton at fully 1c. to 1¼c. lower than the cotton can be bought at today.

It looks like gambling in which spinners have to bet on the cotton market, in company with the Cotton Exchange gamblers. From all reports it would seem there is no necessity of cotton being jockeyed up and down, as the Cotton Exchanges are doing, and as they did last year, which is a constant menace to legitimate trade.

The Government reports are variable and unreliable. Spinners have been compelled to make serious losses on their business this year because the cotton market was juggled last year, in the same way that it is juggled now. Prices were at first depressed and then, by skillful misrepresentations were advanced. Spinners took orders in July and August which they were not able to cover, except at a loss, when new cotton came in, and the year proved there was plenty of cotton to go all around, and there was practically no justification for the extreme advance in cotton. The absurdity of these fluctuations is well illustrated in the chart at head of our review of raw material market.

Without the aid of the Cotton Exchanges, there would, of course, be a natural advance and reaction, but it would cover a longer period, and give the manufacturer a chance to accommodate himself to the different conditions.

Most spinners contend that they are making yarn at a positive loss today. Some houses have taken in yarns of indifferent quality from new mills, advanced money on them, and pushed the market down steadily, starting at from 1c. to 2c. per pound, below the market price; this is inexcusable, but happily such stocks are well cleaned out and the market is relieved.

W. Warren Thread Works,

SPOOL COTTON
on 100 to 12,000 yd. Spools or Tubes.

A Specialty of Thread for Manufacturers Use
on Spools, Tubes or Bobbins.

Also Seaming and Hosiery Yarns
on Cones, Tubes or Skein.

Our bleaching and dyeing facilities are new and unsurpassed for prompt and neat work. Correspondence solicited.

WESTFIELD, MASS.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade. **PAWTUCKET, R.I.**

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double and Twist, **COTTON WARPS**

HOUSATONIC, MASS. 4s to 60s.

BARNESVILLE MFG. CO.

BARNESVILLE, GA.

HOSIERY AND UNDERWEAR YARNS,
Peeler, Bleached, Egyptian or any colors desired. Also,

FINISHERS AND BLEACHERS
of piece goods, underwear, towels, yarns, etc.

THE ONLY USERS OF JACKSON'S FORMULA OXIDIZED BLACK FOR HOSIERY.

We solicit your patronage. Work Guaranteed.

NEW YORK OFFICE and SALESROOM. 910 N. Y. Life Bldg., N. Y.

INDIAN ORCHARD COMPANY,

Indian Orchard, Mass.

Manufacturers of - - - -

COTTON WARPS AND YARNS
In gray and all colors, single or in any twist.

NOVELTY YARNS
In Cotton, Mercerized Cotton, Silk and Worsted, in various Patterns, Colors and Twists.

We are always pleased to assist our patrons of the Woolen Goods manufacture in special pattern warps for samples.

Carded and Colored Cotton for Mixing With Wool

Machined, or in Roving.

Some spinners, new to the business, who tried to sell their yarn direct and were willing to cut out the commission men, succeeded in helping to depress the market.

The wonder is, considering the volume of business being done, that prices have not advanced, and spinners are confidently expecting some advance to bring the cost and selling price more in harmony. Some good orders have recently been made on knitting yarns, but spinners do not like to take orders ahead. A great deal of the yarn sold at low prices, has been only for immediate delivery, from stock, and manufacturers must be constantly buying.

The following quotations are very close to market conditions:

Southern Frame Cones.

6s and 8s	13 to 13½
10s	13½ to 14
11s and 12s	14 to 14¼
14s and 16s	14¼ to 14¾
18s	14½ to 15
20s	15 to 16
22s	15½ to 16½
24s	16 to 17
30s	17½ to 18

Southern Frame Cones.

40s	24 to 24½
50s	31 to 32

Good Mule Cones.

10s	14½ to 15
14s	15½ to 16
16s	16 to 16½
18s	16½
20s	17
22s	17 to 17½
40s	25

Warps.

14s to 16s	13½
20s	14
26s	14½ to 15
14/2	14
16/2	14¼ to 14½
20/2	14½ to 15
24/2	16
30/2	17 to 17½
40/2	23 to 24

Skein.

10s to 12s soft	13 to 13½
14s to 20s soft	13½ to 14
22s	14
14/2	13¼ to 13¾
16/2	13½ to 14
20/2	14 to 14½
30/2	17 to 17½
40/2	22 to 23

Worsted yarn market is firm and spinners generally well sold ahead.

Woolen Yarn.

Spinners of woolen yarn continue busy, and have orders which will last well into December. The hosiery trade is beginning to call for woolen and merino yarns.

The flannel trade is brisk, and is calling for much yarn in fine sizes. The manufacturers of rubber boot lining are

New England Cotton Yarn Co.

NEW BEDFORD, MASS.

JAMES E. STANTON, Jr., Agent.

Branch Offices:

ALBANY: 38 State Street. . . . . E. A. VAUGHN, Manager.
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PHILADELPHIA: 213 Chestnut Street . . . . P. H. CORR, Manager.

Mule Spun Hosiery Yarns, Carded and Combed.

Colored Yarns, Solid, Mixes and Randoms.

Spinners of Cotton Yarn

Frame Yarns, Single and Twisted, Carded—Combed—Bleached

Fine Yarns, For Electrical Purposes

All Numbers 4 to 200.

From **American Peelers, Sea Island, Peruvian and Egyptian Cotton.**

BENNETT, HOWLAND, ROTCH, N. B. SPINNING, COHANNET, NEMASKET, GLOBE, SANFORD, } **650,000 Spindles.**

Entire product sold direct to consumers through the Company's own offices.

CAPACITY, 50,000 Spindles.

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FITCHBURG MASS.

COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

WILLIAM FIRTH, PRESIDENT. FRANK B COMINS, TREASURER

AMERICAN MOISTENING COMPANY,

150 Devonshire St., Boston, Mass.

The "Drosophore" and "Vortex" Humidifiers.

Over 20,000 of our HUMIDIFIERS in operation.

Highest award on the Recommendation of The FRANKLIN INSTITUTE for

"SIMPLICITY and ORIGINALITY of DESIGN"

DANA WARP MILLS

Westbrook, Maine.

WHITE AND COLORED WARPS,

6s to 50s—Single and Ply.

MULE COPS,

from 30s to 50s from

AMERICAN AND EGYPTIAN COTTON.

The J. R. MONTGOMERY CO.,

WINDSOR LOCKS, CONN.

Manufacturers of

Mercerized Cotton Yarns. GIVES THE HIGH SILK-LIKE LUSTRE IN KNIT GOODS AND WOVEN FABRICS

Novelty Yarns. BOUCLE, BOURETTE AND SPIRALS, IN COTTON, WOOL WORSTED, MOHAIR AND SILK.

Cotton Warps. ON BEAMS, JACK SPOOLS AND TUBES. IN FANCY TWIST COLORS AND PRINTED.

using large amounts of cheap yarn, and spinners are making this yarn at prices which cannot show a profit, as much of it costs less than cheap cotton yarn. The manufacturers state that the rubber boot trust is using material now, which one year ago they would not even look at; but the demand for cheaper goods is such that they are forced to use cheaper material; what these goods lack in quality they make up in quantity.

We hear everywhere the same complaint of unsatisfactory prices, and this is the chief complaint today of manufacturers of all popular lines.

"These mills have orders enough which show but little profit," said one manufacturer of underwear. "A few of us who understand what the trade want and can make it, have all the business we want, but there is no money in it for ourselves."

This is a decided improvement, as this same manufacturer one month ago had shut his mill down for two weeks for lack of orders. This demand has all started since Sept. 1st, and every day telegrams are received urging deliveries, and every mail brings complaints on account of non-delivery of goods.

Knitters state that they are entirely out of underwear and are shipping goods as fast as made. The goods are being packed and shipped out as soon as they come off the machinery, and to meet deliveries, job lots af all kinds have been substituted, and warehouses are cleaned out of everything.

It seems strange, with this actual state of things before them, that the buyers do not awake to the real condition of affairs. With mills actually out of stocks of manufactured goods, concerns continue their "peanut" method of doing business.

One manufacturer showed the writer a whole batch of orders urging immediate delivery, with the orders given, ranging from 1/12 to 6/12 dozen of different sizes. Said this manufacturer, "They are sending in orders for immediate delivery, but the whole lot would not keep the mill running 15 minutes." Even on special styles buyers will only place orders for actual requirements, and when later they need more, not only do not get their order filled for immediate delivery, but are forced to wait their turn in regular order of production.

Mills state that they will not carry a stock of goods and will only make on actual order, as buyers take advantage of the manufacturers by trying to buy stock goods for less than cost. When the first cold weather strikes us, buyers will be anxious to buy woolen goods and will

CATLIN & CO.,
YARNS.
67 Chauncy St., Boston
316 Church St., New York.
906 Chestnut St., Philadelphia.

Walcott & Campbell Spinning Co.
FANCY HOSIERY YARNS
IN ALL COLORS.
New York Mill's, Oneida Co., - N. Y.

JAMES E. MITCHELL & CO.,
COMMISSION MERCHANTS.
COTTON YARNS
For All Purposes.
122 & 124 Chestnut St., PHILADELPHIA. 74-76-78 Summer St., BOSTON.
SOLE AGENTS FOR
Lawton Spinning Co., - Providence, R. I.

TUCKER & COOK MFG. CO
MANUFACTURERS OF
WHITE AND COLORED COTTON WARPS
Nos. 8s to 30s,
On Beams, Jack Spools or in Chain
CONWAY, MASS.

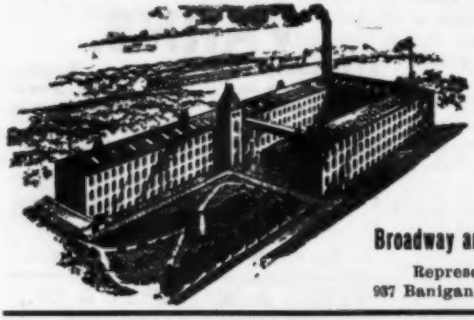
GRANT YARN CO.,
COMBED AND CARDED COTTON.
YARNS 40s and above.
AND
FITCHBURG, MASS. WARPS

COTTON, WORSTED, WOOLEN, MERINO AND FRENCH SPUN YARNS
Mercerized Cotton a Specialty
Write for Samples.
E. A. MORGAN,
54-66 Franklin St., N. Y. City

LINEN YARN IMPORTER.
Hughes Fawcett, 115 Franklin St., New York,
Flax, Hemp & Jute Line and Tow Yarns,
FOR WEAVING PURPOSES
Linen Jacquard Harness Twines.
Fine Cotton Harness and Heddle Twines.
For Cotton, Silk, Woolen and Carpet manufacturers. Correspondence solicited. Samples promptly furnished

C. MOORE & CO.,
MANUFACTURERS OF
TWINES, THREADS AND YARNS.
Jacquard Harness Twines of all kinds on hand and made to order.
S.W. COR. FIFTH & MARKET STS.,
Philadelphia.

HOWLAND CROFT, SONS & CO.



LINDEN WORSTED MILLS.

Fine Worsted Yarns

OFFICE AND MILLS:

Broadway and Jefferson Ave., Camden, N. J.

Represented by FIRTH BROADHEAD,
937 Banigan Building, Providence, R. I.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co.,
MANFRS. OF
ALL NUMBERS SINGLE AND TWO-PLY,

Worsted YARNS,
Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes
Office and Mills: Frankford Ave. and Westmoreland St., Phila., Pa.

CRANSTON WORSTED MILLS.

Worsted and Mohair Yarns—white or colors, in skeins, on spools, cones, or shuttle bobbins.

NOVELTY YARNS—of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making Yarns only.

GENAPPED YARNS of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

...Dyers of Yarn and Slubbing...

BRISTOL, R. I.

FRENCH SYSTEM. BRADFORD SYSTEM

B. F. BOYER CO.,

MANUFACTURERS OF

Worsted and Woolen Yarns

OFFICE AND MILL: Delaware and Cooper Streets. CAMDEN, N. J.

Albert Herbst & Co.,

EMERALD WORSTED MILLS,

East Allegheny Avenue,
Emerald and Wishart Sts.,
PHILADELPHIA, - PA.

MANUFACTURERS OF

Worsted Yarns

FOR KNITTING AND WEAVING.

MALCOLM MILLS CO.,

MANUFACTURERS OF

Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.

Mills, Frankford, Pa. Office, 239 CHESTNUT ST., PHILA.

find it impossible to secure immediate delivery at any price.

On the other hand, the mills are all short of yarn or any other material and are buying wholly from hand to mouth. If a 500-pound order is given by an underwear manufacturer for yarn, he is giving a large order. If 25 bags of wool is bought, it is considered a heavy order, when two or three years ago 200 bags was considered a good order.

We hear some complaint from the trade at the slow pay of some of the knitting trade, and some are really angry if the seller insists on payment; some dealers are keeping away from this trade, because the other branches of industry are so much better.

The knitters' side of the story is that they have been buying conservatively because each time a purchase was made, they could buy for less money, and thus money has been saved by going slow; but all the same the knitters are all out of material of all kinds.

There are not so many tops being offered, as all the tops being offered are bought up by worsted spinners.

There will be much thread waste used during the coming season; it is firmly held, and is advancing in price. Black tops are fast displacing black wool.

The London wool sales opened Sept. 17 with an available quantity of 304,000 bales against 366,000 bales last year. The market advanced 5 per cent. and is firmly maintained. The present series will close Oct. 15th.

Worsted Yarn.

Worsted yarn spinners are all busy with orders which will last until December. The demand is largely for ½ blood to ⅝ blood yarn, with a good demand for ¼ blood. The sizes range from 2/36s to 2/12s, 2/26s, etc.

Many spinners have stopped taking orders, and when manufacturers wish to place further orders, are asking for an advance of from 2½ to 5 cents per pound.

Those who are seeking to duplicate orders for yarn are generally succeeding in placing them at the old prices with the understanding that on further orders higher prices must be paid.

New business is forced to pay the advance. This yarn is used largely in the manufacture of piece dyed cloth, Clay worsteds, undressed worsteds and cheviots.

The cloth business has been very unevenly distributed. The makers of piece dyed goods having all the business because buyers want staple goods, so that if any cloth is left over this season, the change in style of cloth will not find

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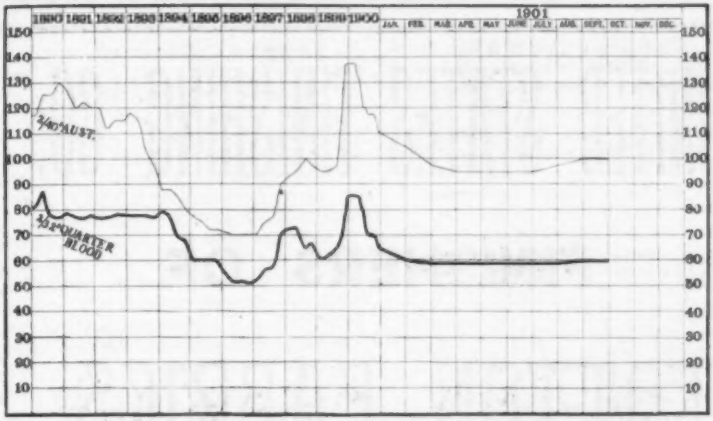

CHART SHOWING RANGES OF PRICE OF WORSTED YARN.

them with unsalable cloth on hand.

Sample pieces have been placed for fancy worsteds in light weight, and later if the demand for this class of cloth comes forth, the jobbers will cover. We think that the fancy worsted light weight season will be late as usual, but that piece dyes in light weights will predominate over every other style.

More business will be secured on heavy weights before the season is over, and the first cold weather will find buyers striving hard to fill back orders.

The importance of prompt delivery is appreciated by all and no mill with spinning machinery is today idle. This applies to French as well as English machinery.

Some weavers purchased largely of yarn to cover their light weight fancy orders. These orders have not come forward as promptly as was expected, and in consequence weavers of fancy worsted cloth are piling up yarn, as most of

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them are getting only sample piece orders.

All weavers certainly are forced to cover on yarn, as all believe that during the next 60 days yarn will range higher. It cannot be too plainly stated that most of the present business is on piece dyes. Spinners are having such a business for this class of yarn that when orders are placed, spinning instructions must be given immediately or weavers lose their place by some other weaver taking it almost at once.

Of course there is another side to this business, and it comes largely from mills who are without orders and who have not covered on material such as tops and yarn. These mills are fearful of a decided advance and are trying to make themselves believe that prices will either remain the same or be lower. These mills state that within the next 30 days the orders for heavy weights will be out and then spinners will get slack again until the light weight season starts up.

These predictions are likely to prove true on fancy worsteds, but will not affect the spinners who are running mostly for piece dye worsteds. The manufacturers of bunting are slow and are getting no orders. The present condition of affairs is most unusual in the history of the trade. Some mills—probably the large majority—are running full; other mills are without orders.

Worsted tops are in good demand; dealers have all the orders they can fill, and tops not contracted for are firmly held, as it is firmly believed that prices will be higher.

The spinners bought largely of combing wool during the last 60 days, but when they are again on the market they are fearful of a material advance.

French spinners are busy, but are selling most of their yarn to weavers of cloth and French flannel manufacturers.

Knitters have had a bad season for worsted fabrics, and while using considerable yarn at the present time, within the next 30 days will run off, while on the other hand the hosiery manufacturers who have been ordering no yarn, not knowing what grade to order, will be on the market for yarn, and much yarn will be sold for this purpose. All state that, if buyers do not order soon they will be unable to produce hosiery on time. The spinning end of the worsted business is in a healthy condition with firmer prices.

We quote as follows:—

2/40s Australian	95 to 1.05
2/40 delaine	85 to 90
2/40 half blood	80 to 85
2/30 ¼ to ⅜	58 to 62½
1/40s half blood French spun..	75
1/30s half blood French spun..	70

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SHODDY, WASTE AND RAG MARKET.

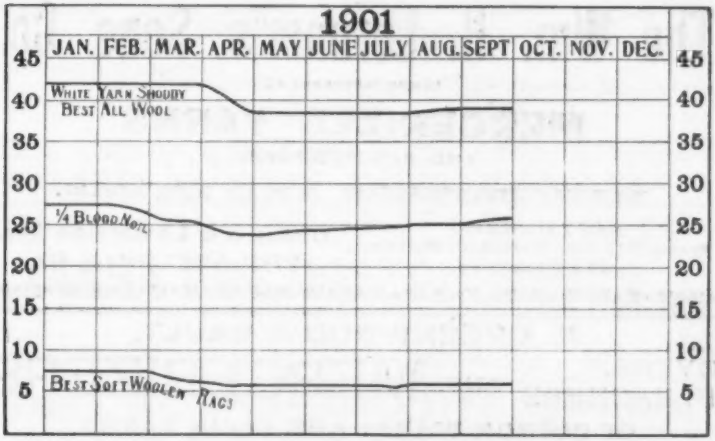

CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

The general tone of the shoddy market is very quiet, with, however, a certain feeling of expectancy in some quarters based on the assurances of manufacturers that if certain lines requiring shoddies in their make-up realize their anticipations good orders will result. Prices of a month ago still rule and are likely to hold for some weeks. Fine medium, both light and dark, is the line which shows the most movement, and then only in small lots. Colored stocks do not figure in today's market. There is absolutely no tendency to buy in ahead, the uncertainty of demand in the goods market causing buyers to hold off until orders actually come to hand.

Even with these conditions prevailing there will be no decline, for the shoddy manufacturers as a rule seem disposed to hold their wares and await further developments.

NOILS AND WOOL WASTE.

A slight upward movement is to be noted in ⅜ and ¼ blood noil, due probably to the scarcity of these grades which has prevailed now for some months. Good lots sell without difficulty at or near the prices quoted. Another feature in the general tendency of the noil market may be the fact that a considerable number of manufacturers have bought noils instead of wool substitutes, thereby turning out a better line of goods at a not greatly increased cost. There seems to be a feeling here that should wool become stronger, noils will be quoted at the present figure or better even in the face of the increased production from the busy worsted mills. A much better selection is to be expected by the first of the year. Wool waste still continues dull.

RAG MARKET.

Soft woolen rags remain quiet. There is some movement, but not as much as was expected a month ago. There is more or less activity in new clips. Some of the satinet mills are using blue clips and worsted quite freely. In fact, a price higher than our quotation has been asked in some quarters, but without success. The lower grades are almost entirely ignored. Prices of the last few weeks still rule, and there seems to be little cause for a reduction, since the dealers, like the shoddy manufacturers, are disposed to hold their stocks in the expectation of a larger volume of business in the near future.

SHODDIES AND EXTRACTS.

White yarn, best all wool	38–40
White knit, all wool, best, fine	28–32
White knit, No. 2	3[illegible]–28
Light yarn, extra fine	25–28
New pure indigo blue	23–25
Fine worsted, new black	24–26
New blue clip, best fine	20–22
Dark mixed yarn, extra fine	22–24
All wool yarn, medium and coarse grades	18–20
Merino.	
Fine light, all wool, No. 1	24–25
Medium light, all wool, No. 1	16½–17½
Medium light, all wool No. 2	14–15
Fine black, all wool	18–20
Fine dark, all wool, No. 1	18–19
Medium dark, all wool, No 1	12–15
Medium dark, all wool, No 2	11–13
Red knit stock, strictly all wool	19–20
Red flannel, all wool	18–20
Dark blue for hosiery, strictly all wool, No. 1	17–20
Dark blue for hosiery, not all wool, No. 2	12–14

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Regular grey	12–13
Black	13–15
Fancy colors	16–20

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Fine merchant tailors, all colors	8–9
Choice light colors	12–14
Browns	12–13
Blacks	9–10
Fine blues, plain	10–11
Fine dark	10–11
Medium dark	6½–7½
Worsteds.	
Blue	15½–16½
Black	18–20
Serges.	
New blue	14–15
New black	14–16
Flannels.	
New scarlet	17½–18½
New blue	15–16
Cloakings	3–4

SOFTS AND KNIT STOCK.

Soft woolens, best	5½–6
Old white flannels	17–18
White flannels, No. 2	11–12
Old red flannels	9–10
Light blue flannels	7½–8½
Old blue flannels	6½–7
Old plaids	5–7
White stockings	18–20
White hood stock	21–22
Clear hoods	8–9
Red Stockings	9–10
Blue stockings	9–10
Fancy stockings, No. 1	7–9
Grey stockings	8–10
Black stockings	8–9½
Knit stock comforters	7½–8½
Red knit	9–9½
Light grey knit	7½–8
New light fancies	14–15
New fancies	11–12
Merinos.	
Light, fine	13–14
Light, coarse	6½–7
Fine dark	8–9
Dark, No 2	5–6½
Coarse dark	4–5
Blue	10–11
Blue—seamed	12–14
Black—unseamed	9–10
New black	18–20
Small	3–3
Bunting	6–6

NOILS.

Australian	48–55
Fine domestic	40–45
½ Blood	35–40
⅜ "	29–32
¼ "	25–27
Braid	22–25
Carpet (white)	14–18
Carpet (colored)	10–12½
Seedy.	
½ Blood	25–30
⅜ "	20–25
¼ "	17–22

FLOCKS.

Shear, fine white, all wool	13–15
Fine indigo blue, all wool	9–9½
Fine black, and blue, all wool	7½–8
Fine dark, all wool	6–6½
Gig, fine, all wool	3–4
No. 1, black, all wool cut	5–6
All wool, fancy, shear and gig	2½–3½

CALCULATIONS
—IN—
YARNS AND FABRICS.
By FRED BRADBURY,

Head Master, Textile Dept. Municipal Technical Schools, Halifax, England

This work, as its title indicates, treats of the many calculations relating to yarns and fabrics, and, while giving rules and clear explanations, supplements them by examples taken from actual practice.

The first chapter is devoted to the various systems of yarn numbering, and contains comparative yarn tables of the different systems in use, and methods are given for calculating the equivalent of any size by the other systems, and 24 practical problems are added.

Chapter 2 treats of the counts resulting from a combination of two or more threads of the same or different sizes, and 27 problems are included.

Chapter 3 is on the relative weights and cost of twist and mixture yarns, including boucle, corkscrew and other fancy yarns; 26 practical problems are given on this subject.

Chapter 4 is entitled, Weight and Cost of Warps and Weft in Hank, Ball and Otherwise, and includes 16 problems illustrating the various questions likely to arise in practice.

Chapter 5 treats of the various systems of counting reeds and healds, and is accompanied by 20 practical problems.

Chapter 6 deals with the weights of warp and filling in fancy woven fabrics, the number of ends and weight of each color, and handles the complex problems with unusual clearness, and 18 questions are given to illustrate the subject.

The weight and cost of woven fabrics receive attention in chapter 7, and chapter 8 treats of calculations involved in the reproduction of woven fabrics. This branch of the subject is well handled and the problems given add much to the value of this chapter.

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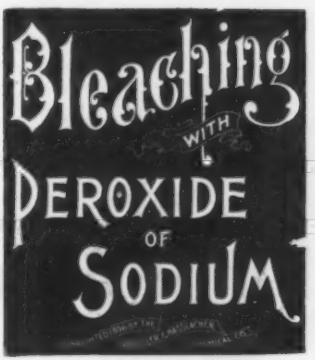

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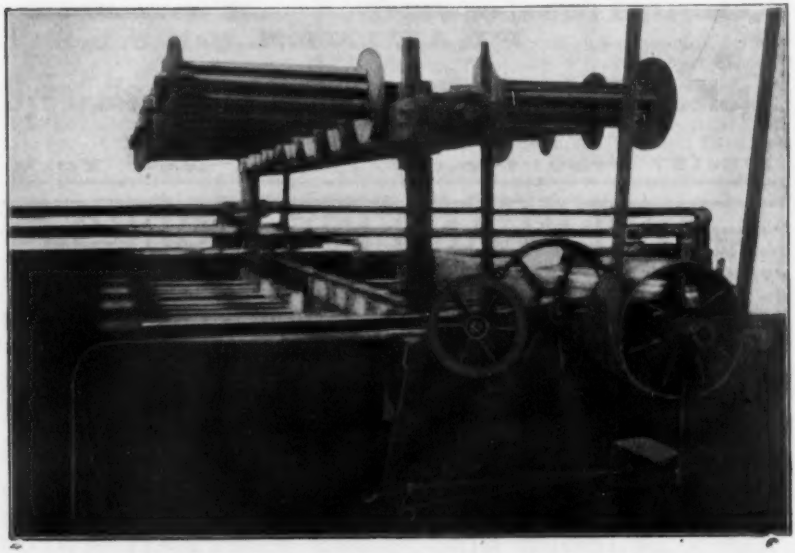

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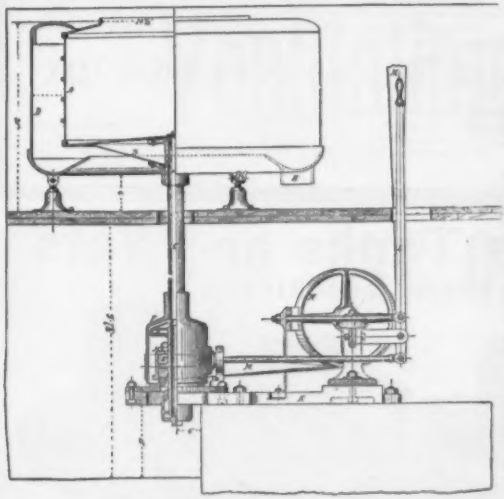

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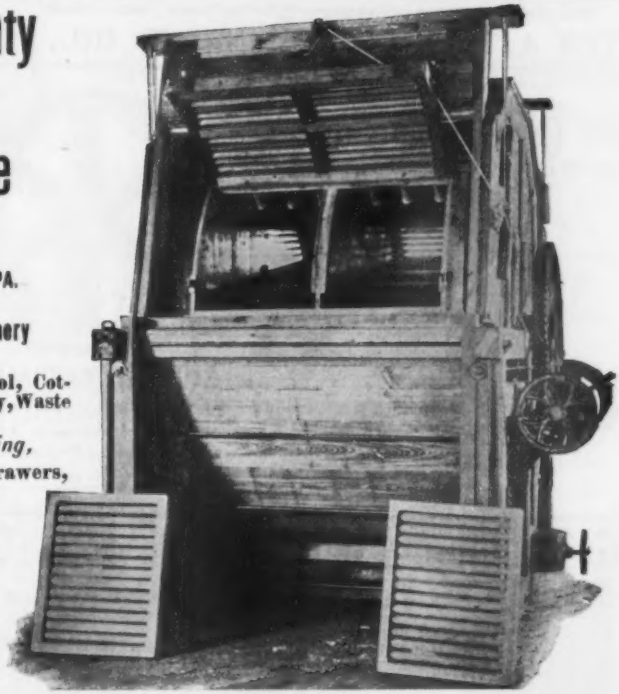

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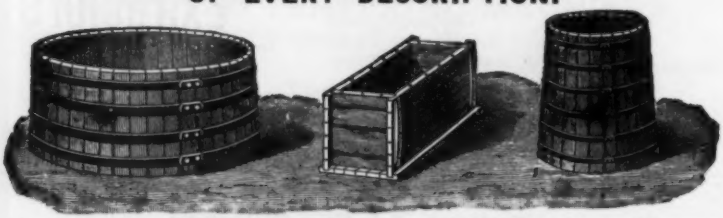

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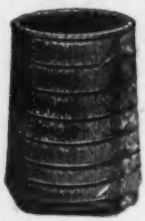

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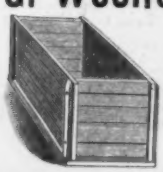

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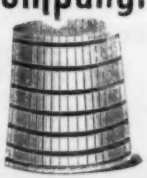

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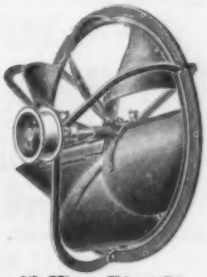

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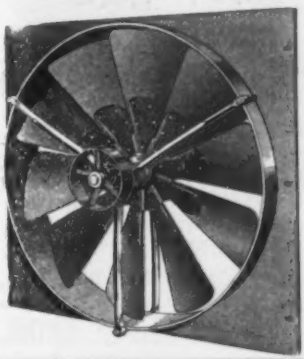

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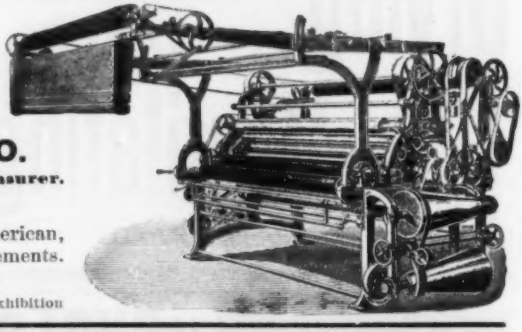

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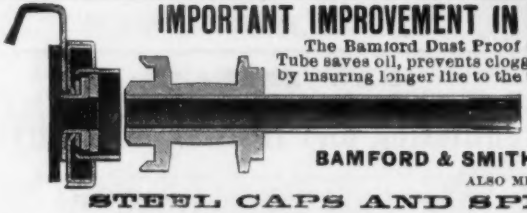

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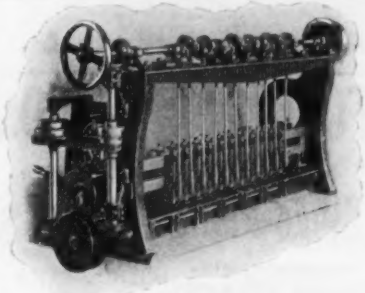

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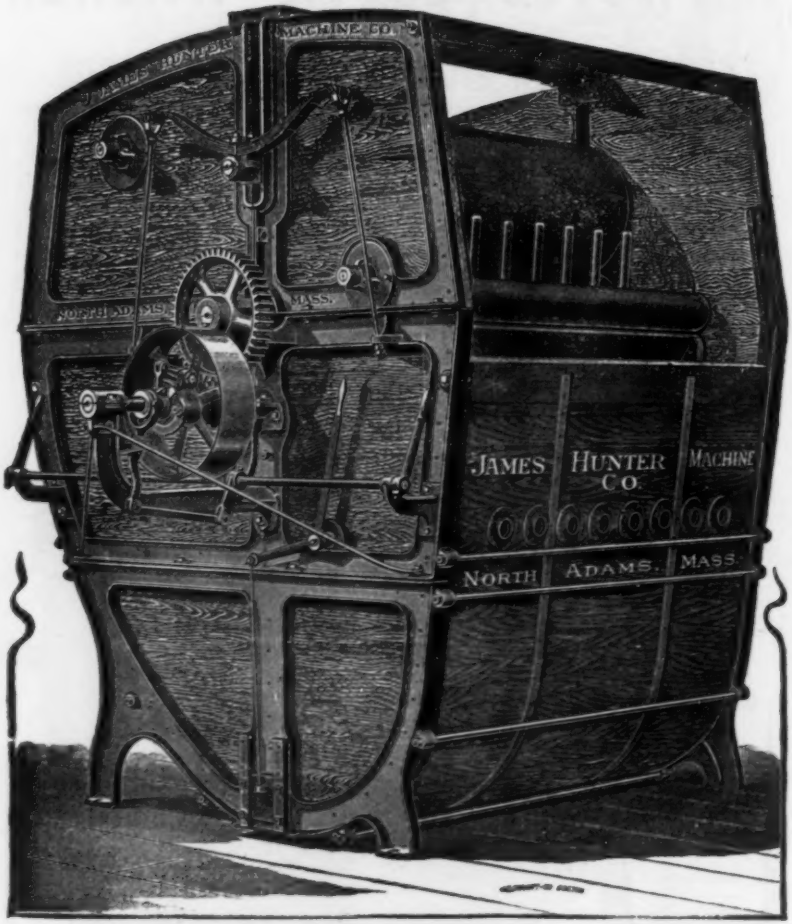

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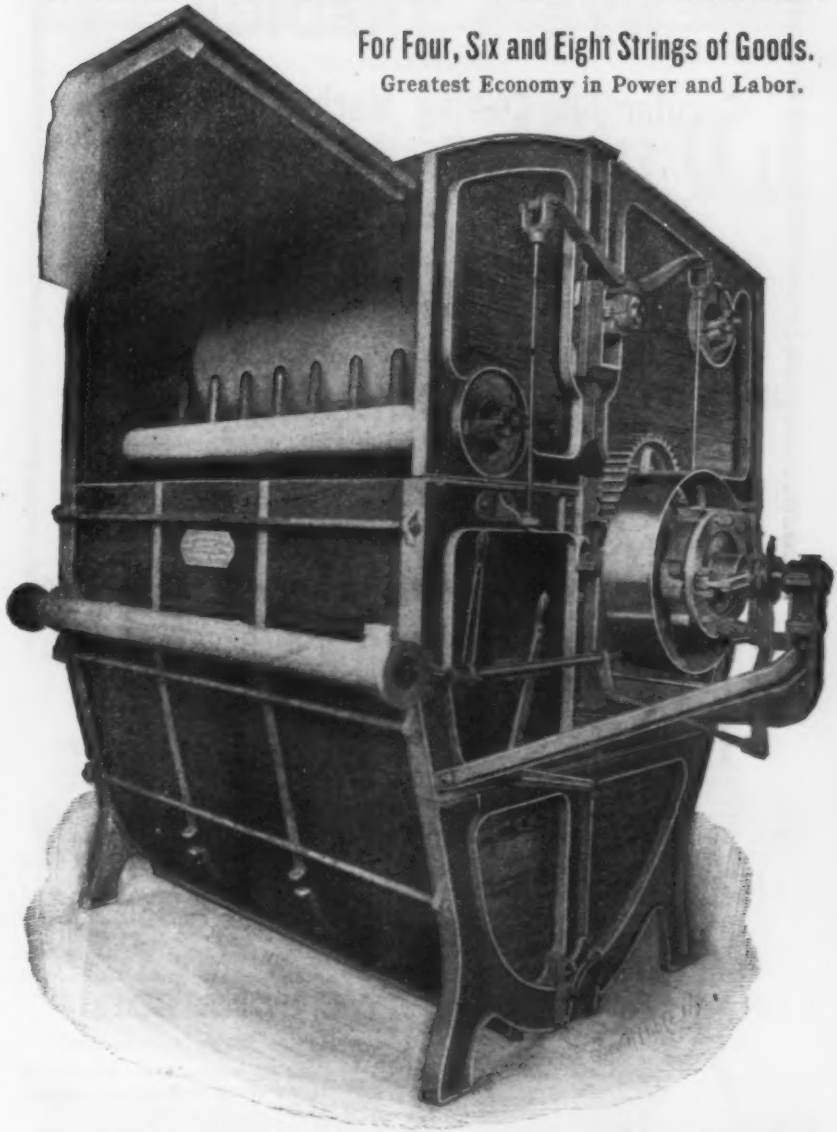

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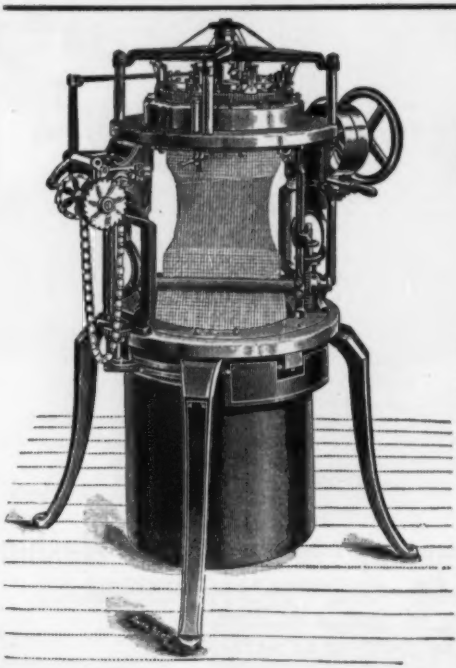

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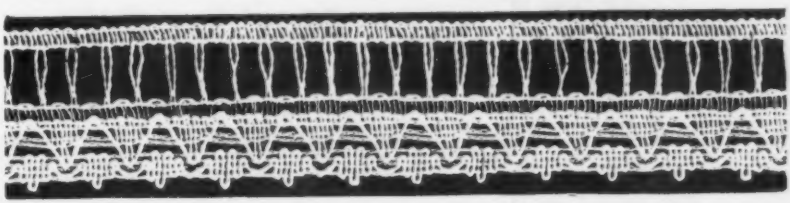

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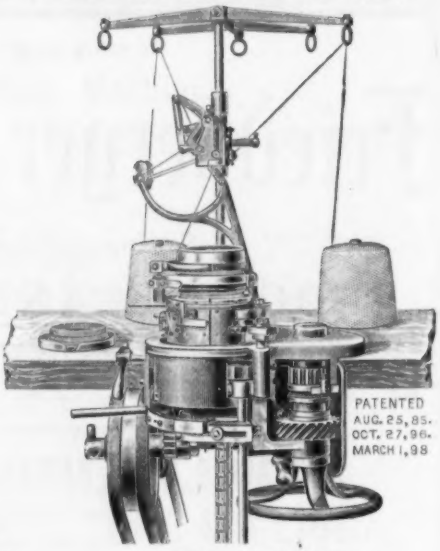

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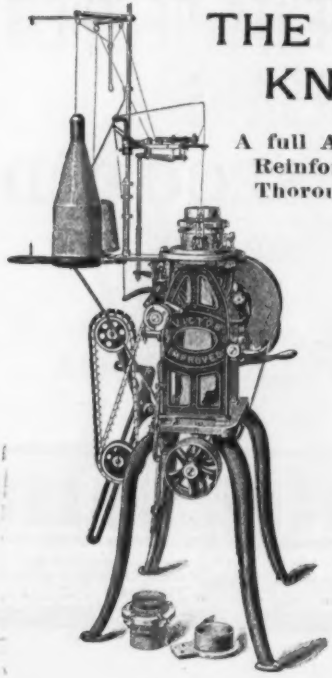

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A full Automatic Seamless Hosiery Machine. Reinforcing Thread Automatically Inserted. Thoroughly Interchangeable in all its parts.

More simply constructed than any Machine on the market.

Automatic Two-color Striping Attachment, also, Black-Leg White-Foot Attachment.

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Main Office, Room 5, Knickerbocker Building,

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Southern Branch, Charlotte, North Carolina.
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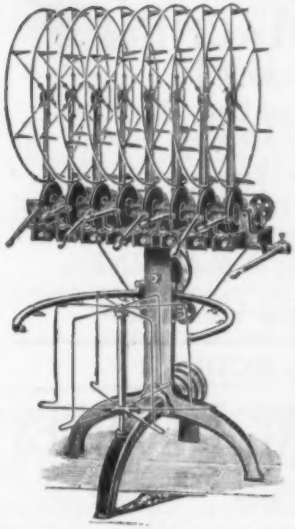
JAMES TAYLOR,

Knitting Machinery for Hosiery and Underwear



Back-winding Machine for winding the yarn from imperfect pieces back into skeins.

New and Second Hand.

SPECIALTIES IN NEW.

Sole Selling Agent for Stafford & Holt.

UNEXCELLED MACHINERY FOR RIBBED UNDERWEAR,

Sweaters, Bathing Suits, Toques and Specialties, with or without Automatic Stripers and Designers.

These machines have the **only absolutely perfect Take-up Device** Depends neither on springs, friction, ratchet, nor state of weather for its efficiency.

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All inquiries and orders relating to the above machines should be addressed direct to me.

LARGE STOCK IN SECOND HAND.

Everything pertaining to the manufacture of all classes of Knit Goods, for example: Machines for Ribbed and Flat Underwear Hosiery, Sweaters, Jackets, Mittens, Gloves, Borders, Facing, and Gas Mantles, Buttonhole and Button sewing Machines, Concealed Stitch Welters and Trimmers, Union Specials, Steam Presses, Winders, Ribbers, Sleevers, Loopers, Whizzers, Stop-motions, Cylinders and Dials, Needles, Pins in bulk, Brass Stamps, Stamping Ink, —in short, write us if you are in need of anything, or if you have any Machines for sale.

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CIRCULAR RIB KNITTING MACHINES,

Carefully designed and well made with Solid Forged Steel Cylinders and Dials, Segmental Cam Rings, Encased Take-up, Stop Motions, etc. Standard Sizes, Reasonable Prices. Also

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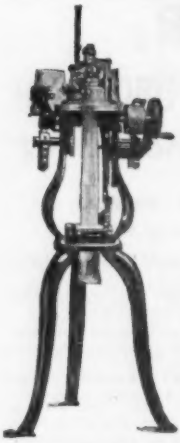
506 N. American St., PHILADELPHIA, PA., **Pioneer Builders of**

Knitting - Machinery

FOR SEAMLESS HOSIERY.

Estimates for Plants Complete.

Write for information and catalogue.



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Pepper's Flat Ribbed Cuff Machines,

Automatic Welt and Loose Course Machines for Sock Tops. New Circular Stripers with Welt, Loose Course and Striping (Automatic), for Shirt Cuffs, Sock Tops, Hose Legs, Wristers, etc.

GOLF AND BICYCLE STOCKING MACHINES.

ALL KINDS OF

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For Men's Underwear, Ladies' and Misses' Hose Legs and Leggins.

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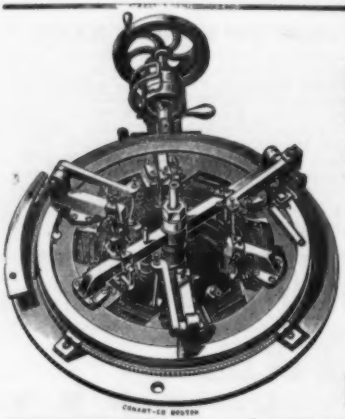

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Either plain or full automatic, with stop motion complete, for

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SWEATERS,
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CUFFS and ANKLETS.

The Leighton Circular Machines are the only ones which **Rack** or **Shog** the needles for fancy borders; also built for automatic striping; and with from 4 to 16 feeds for underwear.

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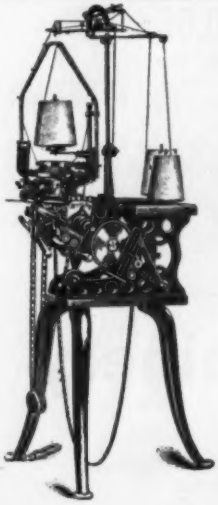

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Regular 7-8 Automatic for all classes of Cotton Hose. Special 3-4 Automatic for Wool.

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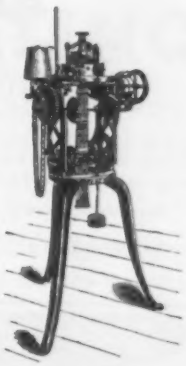
Full Automatic Seamless and Ribbed



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GAS ENGINES for city or country. | EFFICIENT
BRUSHING MACHINERY | DURABLE
KNITTING MACHINERY | LOW IN PRICE.

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The only Perfect Stamp for Hosiery, Underwear and all Woven Fabrics.
Blocks for Printing Hosiery.
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PERFECT FAST BLACK FOR HOSIERY.

THE WORK SPEAKS FOR ITSELF.

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Adopted by leading mills everywhere successfully. Mills started with Dye Formula for black with lisle thread finish, also with colors and bleaching formulas if desired, taught by Mr. Dubois himself. Will contract for the Dye formulas alone, or for any piece of machinery required to start fast black dyeing.

FOR LUMP SUM IN CASH OR ON INSTALMENTS.

The black is inexpensive, non-poisonous, color always uniform, will not crock, fine shade blue black or jet black produced as desired without extra cost.

Stockings dyed in one dip, right from the Knitting machine and leaves the goods strong.

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Note.—My oxidizing machine, patented, June 18, 1901, No. 676647, is especially constructed for "Lisle Thread Finish" and is the only rotary machine that carries the goods while oxidizing or lisleing at all the points of the compass; oxidizes in one third less time and does away with production of nascent hydrochloric acid that tenders the goods.

No. 1 Cost $2.60 per 100 lbs.
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" 3 " 1.80 " " "
" 4 " 1.40 " " "

These three blacks will not turn green when tested by muriatic acid.
and is almost ungreenable to acid test.

I guarantee all the above in every particular, or no money. Address Direct

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3-4 Automatic Knitter

FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.

Has the preference wherever used over 7-8 and full automatics. Because it makes as much or more goods and better goods. Costs less for repairs. Gives less trouble to fixers Range on Half Hose, from the coarsest to 220 needle.

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Cylinders and Dials for all size machines.

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HOSIERY FINISHING BOARDS.

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"OVERLOCK" MACHINE

(TRADE MARK.) (Pat. Apr. 5, 1892.)

Patent twice sustained by U. S. Circuit Court of Appeals.

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For SEAMING, HEMMING AND OVEREDGING Flat, Ribbed and Fancy Underwear and Hosiery. And for OVEREDGING Lace Curtains, Ribbons, Belts, Hat Bands, Flannels, Blankets and other Fabrics.

IT MAKES

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And in each case with one operation only, including trimming and covering of raw edges.

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Business established in 1859.

THE ELASTICITY OF ITS STITCH EQUALS THE FULL STRETCH OF THE GOODS.

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Knitting Machinery

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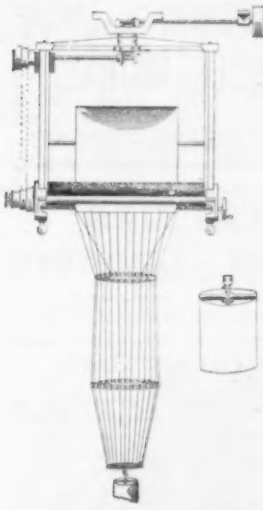

To KNITTING MANUFACTURERS.

Is it of any benefit to you to save ¼ in Time and ¾ in Room

IN DOING YOUR

Drying of Tubular Goods?

If so, you can do it by using the

NEW PATENT UNIVERSAL DRYER.

That is what one of the most expert and successful superintendents of knit goods tells me he is doing. It does better work than any dryer he ever saw, and more of it. He has 6 now in use and will soon replace all others with them. Save yourself money by using only the Latest Improved.

Remember, also, our

CHAMPION NECK MARKER

has no equal. Made from an entirely new design, either foot or steam power. Send for circulars and prices to

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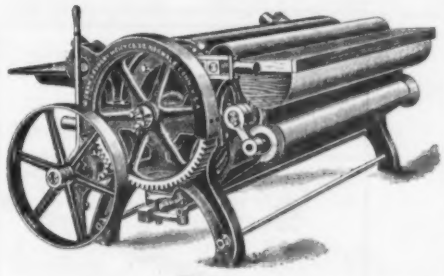
Sole Owner and Manufacturer. UTICA, N. Y.

AUTOMATIC IRONING AND PRESSING MACHINE FOR KNIT GOODS.



This machine irons and presses ribbed and flat underwear, giving a fine smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

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Merrow High Speed Crochet

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For finishing the edges of Knit Goods, Bed Blankets, Horse Blankets, or other fabrics.

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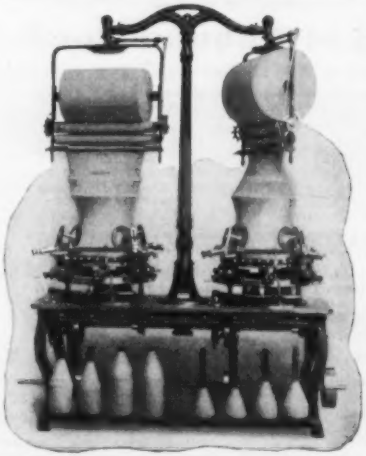

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Knitters, Winders, Burrs, Attachments.

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Shaped Swiss Ribs,
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The best hosiery needle in the market.
Manufactured by
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All work guaranteed.

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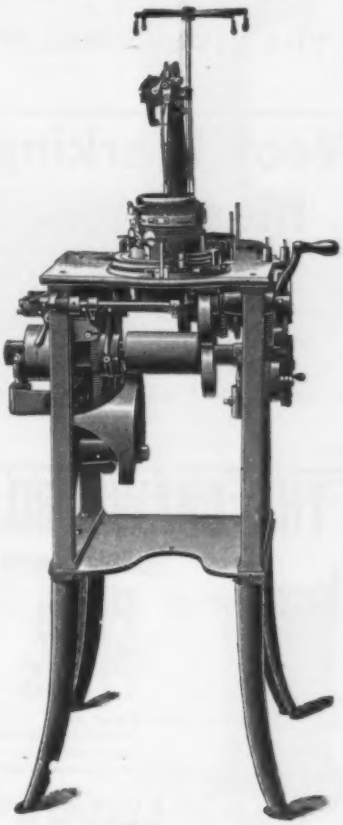
Automatic Knitter,
FOR SEAMLESS HOSIERY.
All Kinds and Gauges.



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Greatest production of perfect work at least expense.

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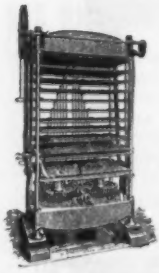

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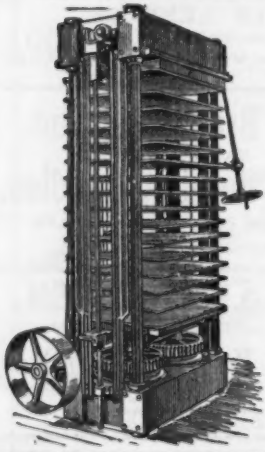

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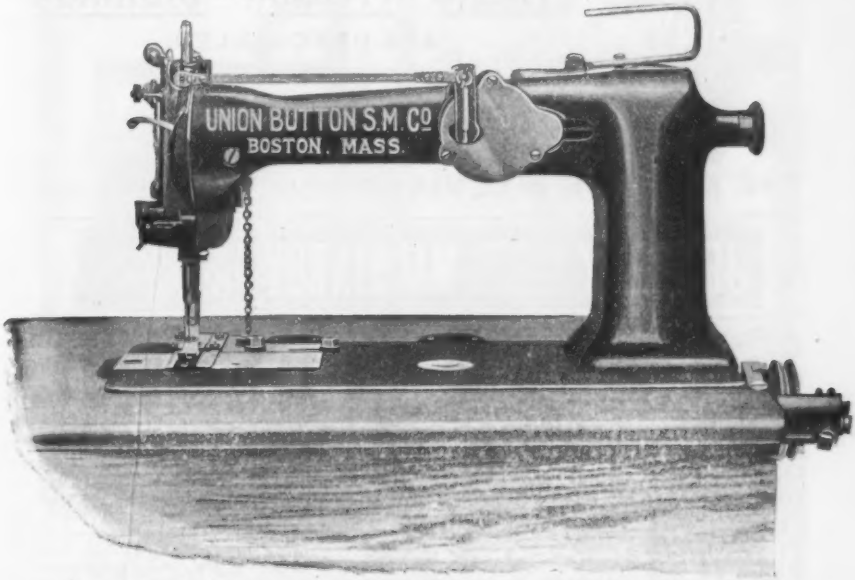

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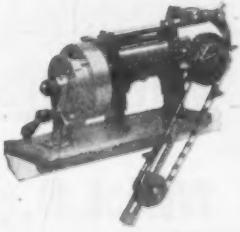

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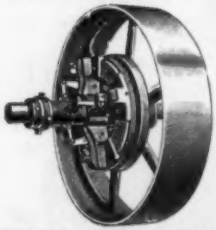

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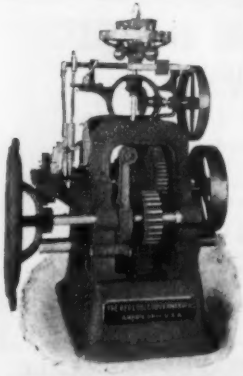

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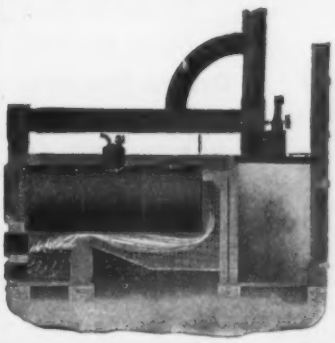

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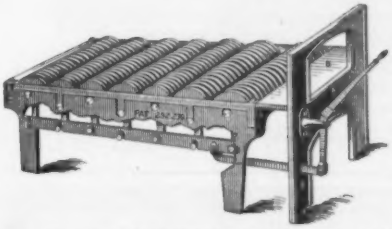

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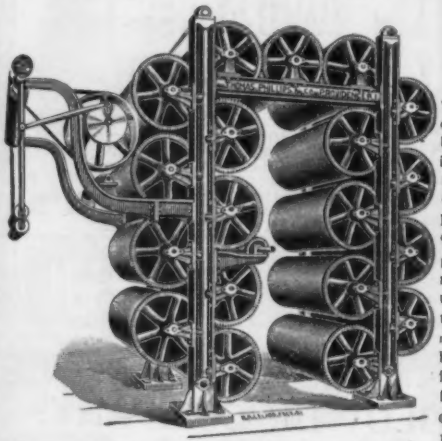

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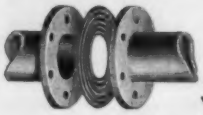

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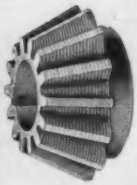

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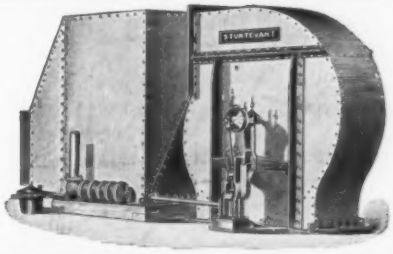

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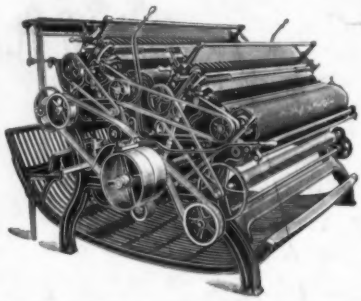

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